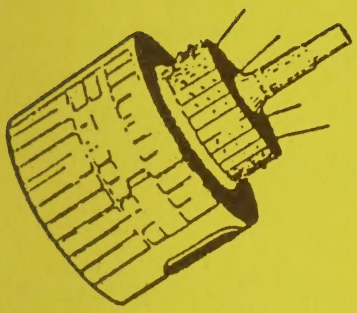
NEWSLETTER No. 26



REMOTE IMAGING GROUP

SEPT 1991

REMOTE IMAGING GROUP.....OFFICERS 1991

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SEPTEMBER 1991

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FROM THE EDITOR'S DESK

Let me first apologise to our long-suffering readers for yet another delayed magazine. It might be easier to explain if we thought of it in more personal terms. RIG 25 had come into the world in late July, was a perky little baby, doing well, and had put on quite a bit of weight by the end of the month, and was, so we thought, happily put to bed around the beginning of August. Unfortunately his condition then began to deteriorate and by mid-September his slumber had become a positive coma. Dr. Neale was called in and diagnosed chronic digital impulse failure (fingers not being pulled out!). The little chap was then rushed into intensive care in late September, and thankfully after a lot of work and emergency remedial action, was successfully resuscitated just in time for October. Many vows have since been taken concerning the non-repetition of our problems, preventative medicine has been prescribed and we believe now (famous last words) that future off-spring in 1992 will arrive as planned. It does mean however that you are unlikely to find a RIG27 in your Christmas stockings!!

One of the most popular areas of debate amongst our UK politicians this year has been over the phrase 'style or substance', indicating that personalities and policies are often inextricably linked. In a sense that is also worth bearing in mind when you read a RIG magazine. I would never feel it was my duty to so edit articles that they all read like a policy document of the EEC, but my brief is more concerned with keeping a check on technical accuracy, readability and simple truthfulness. After that, what you see reflects very much the personality and views of the author. The style of some is simple, others more technical, yet others indulge in touches of flamboyance and hyperbole (I've been at the thesaurus again). What you always need to keep in mind is that time-honoured expression, 'the views of authors do not necessarily reflect the views of the committee'. The last thing we want to do is to cramp people's style, but please remember that 'style' and 'substance' are not the same thing. That is particularly relevant to where authors may have more than one hat to wear. Our present policy is to welcome useful articles from those who are involved in RIG related businesses, but we need to also take into account the 'hats' being worn. A representative of say the FORD motor company writing a technical memorandum on lean-burn engines, is unlikely to be scathing of his own product, and would certainly be justified in drawing the attention of readers to it, and that wouldn't undermine the value of the article. But we also welcome articles or extended letters from beginners, because we've all started somewhere, and the tendency of us 'old hands' is to become caught up in jargon and forget that once-upon-a-time we'd never heard of terms like 'sync pulses' and 'NOAA's' and 'Keplers'.

So keep the items rolling in, and don't be afraid to dip your toe into the literary side of our hobby. You may not win the Booker prize but so often one person's letter may be another person's solution, and they say that everyone has got at least one RIG article in them! Submissions on disk (all sizes catered for) are specially appreciated, and standard ASCII is preferred, although we can cope with some Wordstar and Word Perfect formats.
Cheers for now, James Brown.

FROM THE MAKE-UP EDITOR'S KEYBOARD

Firstly, apologies to all for the late arrival of RIG25. As mentioned by the Editor, the fault was with the printers. We passed over the copy in early August, but the printers did not live up to their consistently broken promises, and in the end we had to remove it and have it printed elsewhere. We are grateful to the printers who finally produced it in just over two weeks. Steps are in hand to ensure that this never happens again.

Now for some good news... We have had two offers of help in producing the artwork, circuit diagrams and illustrations for the RIG magazine. These are gratefully accepted and no doubt you will see the results in future editions.

ERRORS IN RIG25... A couple of errors crept into the last newsletter:
Firstly, apologies to Mark Clarke for calling him 'James' in the Contents page.
Secondly, in Graham Smith's excellent article, the diagram on p33 (top illustration) reads "12T Brass gear". This should read "15T Brass gear". The mention in the text is however correct.

NEW FORMAT NOAA PREDICTIONS... You will notice in the centre pages that the Noaas look a lot different. These have previously been sent in by Bob Leggett, but he informed us a few days before deadline, that he was no longer willing to support RIG in this way. With only a few days to go, and with the only available software at hand, my son Simon and myself have generated some usable NOAAs. They do not show the degrees from the Greenwich Meridian at the Equator, but the two passes a day (timed for Southern England). Please let me know if you prefer these, or whether we should write new software to generate them in the old style.

DEADLINE FOR RIG27 COPY... We hope to get RIG27 in the post by mid-January; but in order to do this we need your help. Regular and new and contributors please send all copy to James Brown by Saturday, 7th Dec. 1991. If your article contains circuit diagrams or illustrations, please send it in at least one week earlier. Trade Adverts direct to me (Mike) please.

CHAIRMANS WAFFLE...

Why is Henry sitting in front of his PC, late at night typing in the Chairman's Waffle in his birthday suit? As usual it is a long story and as usual we are late with the Newsletter. Well, its late at night and my wife wants some of my clothes to put in the wash and there is also a bath waiting for me. By the way, I don't think we shall get the December one out till the New Year but we are definitely reducing the time slip now. Please accept an early Merry Christmas and Happy New Year to all of you from the Establishment. Your subscription renewals will be in that next Newsletter. Please wait until you get the form!

I've had a long day at the Leicester Rally, left a little early, arrived home at 7.15pm, crammed some food (quickly prepared after a call over the PMR) into my eagerly awaiting mouth, took a telephone call, arrived for a parish council meeting at 7.35pm when it started at 7.30pm and no I didn't nod off. The meeting finished soon after 9-30pm and it is now 10-30pm and I want to give Mike the Chairman's Waffle tomorrow when he goes to the Rally. No I cannot leave it till Sunday because I shall be away for a few days with the Kitchen Manager so that she is less aggrieved! If I don't, the hastily prepared food will not be available when asked for at short notice. Recently I've been pushing the management plenty far enough and they need a bit of buttering up now and again.

Back to the Chairman's Waffle, or I will never get it done. There is only one way - just sit down and do it! Sometimes that's easier said than done. Sometimes this twaddle arrives easily and another time it is hard work - especially when you need it urgently! I had done 85% of it but it all emerged without a beginning, and thats what it needs now. It would be nice to tell you about all the development work that I've been doing or some new products that I've seen - but there aren't any. I have collected about 50 Kg of demonstration type fireworks and thats quite a lot. It's certainly enough to make many a school boy cast an admiring eye and look forward to the night. In this parish we have a village display, for which we raise money, and then the display is free! Everybody is welcome but it will be over by the time you read this.

Henry's commitment to the village is as time consuming as it used to be, but nevertheless he always seems to get lumbered! I did have several jobs in the village but these have been somewhat reduced over the years. I just do not have the time to do everything that I used to do. Now that I've got a cordless telephone I'm even taking calls in the bath! You can tell by the echo! Next time you ring don't hang on too long otherwise Henry might go all (wrinkly?). The phone has let me talk to tomorrow. A call from New Zealand was taken

on a Sunday night but their time was Monday morning. The only way left is for Colin to ring me in the morning and then I shall be talking to yesterday! You are not kidding, it is twaddle this time and he hasn't finished yet!

Ray Godden (with regard to the Committee statement in RIG24) has gone thoroughly through all the letters that the Committee received and his review is included later on. I hope that we can now put that episode behind us, and get on with the work that the Group has ahead of it.

Talking of work, I must confess that I have been very busy during the summer months. I have tried to do the required work as quickly as possible but at times it has not been instant. I have now caught up with 98% of it and the remainder will soon be dealt with. I have dealt with those items that only required the name and address written on the box the same day but those that required more, took longer. The LNA kits were the last to be completed but even they have now been done. This latter item was not as easy as many of you might think, but nevertheless I am now up-to-date. I would like to maintain that position for the next 8 months until harvest 1992. I have at times been out of stock of certain items but I like to keep enough stock to carry me through the period it takes from ordering to delivery. Unfortunately I am not always successful. At this instant I have only 5 LNA kits on hand but further supplies have already been ordered so when these run out the new ones should be just arriving. The dry summer weather has allowed me to complete my farming operations relatively early this year and things have gone very well with a few exception - more of that later. I am able to get back into a less hectic modus operandi(?) and can then spare more time for RIG matters. At the moment I am not getting much time to do the research and development side so I'm falling behind there. I will catch up - sometime. Sometimes I think it would be so much easier if things went like clockwork. Perhaps it will for this Newsletter for a change, I can only hope.

PROsat II as awaited by many and is now with us. It is a very nice system but is meant for those with a higher technical ability and for those with a higher understanding of imaging systems. It is reviewed in this newsletter so I won't spoil it for you except to say that I have it in stock for £253 incl. of P&P. If you wish to upgrade from PCsatIII it must be done directly with Timestep for £120.

My wife and I decided to have an early break this year and have a weekend in the Appleby in the Westmoreland area. Very nice it was too. We took a Round Robin on the Seetle - Carlisle railway, travelling North to Carlisle, then South to Lancaster, East to Skipton and finally back to Appleby. It was on Carlisle Station platform that things took a different turn! Whilst walking up the platform my wife was accosted by a stranger! Mind you Henry tried to find

a concrete pillar to hide behind but just when you want one there wasn't one available. I should explain what happened. This tall dark stranger(?) said to my wife "Mrs Neale? - Mrs Henry Neale?" I think that she then recognised his voice because this had all been a set up by Henry. The tall dark stranger was no other than Peter Ingram with his wife and family. My wife had often spoken to Peter on the telephone but had never met him. Well, with my trying to desert her, she knew something was up and then recognised his voice. She might have known that I would get up to something and she is becoming very wary of the unexpected. It keeps everybody on their toes! My thanks to Peter and family for their co-operation in setting it up and the opposite to BR for being late getting us there! The rest of the journey was very relaxing - just sitting there and letting the countryside go by. I think most drivers know what I mean when I say that we could let the train take the strain and not have to worry where to go at the next roundabout! It was also nice to see everybody else having to wait for us to go by at level crossings. Mind you there didn't seem to be many level crossings anyway it was mainly over or under instead. Unfortunately we haven't been able to get away again but we might manage a few more days towards the end of the year.

During the early spring my car exhaust started to have a discontinuity in its system. Having welding equipment on the farm and the fact that the exhaust didn't seem that old anyway I decided to take it off and repair it if it was possible. It was only a break around one of the entry pipes and much to my surprise I was able to braze it quite easily. Normally they have some peculiar coating on them that makes them difficult to weld. I thought that this was simply there to deter people, like me, from repairing them and make you purchase a new one. So it was brazed and returned into circuit. Two months later, the other end had the same thing happen to it. Henry again brazed it and re-installed it. A few more months later there was a hole in the side which I didn't think that I could repair. This time I went back to the Exhaust Centre (not the quick fit vicars type) and had a new section fitted. Nothing special about that I can hear you say but the next bit was. The fitter asked me if I wanted the old bit back so that I could recover the brass? Do you think that he knew Henry?!

You've heard several stories about my old combine, well this year she has behaved herself quite well. Not too many repairs, spare parts or sounds of indigestion. She did give me a heart attack at the beginning of the season but the story could be considered indiscreet, so those of you with a delicate constitution should skip this paragraph! It all started on a very hot Saturday afternoon. There was Henry, getting on with his work with his crash helmet on (self contained clean air system). I had completed half the field and was just starting the second half. The first swath that I did was on a slight slope.

After I had gone about 100 metres I noticed that the alternator was charging at 30 amps! then it started discharging at 30 amps!! Something wrong here - must be Henry's wiring. I stopped threshing and lifted the lid on the engine compartment to discover flames about a foot high coming out of the top of the battery. The top of the battery (plastic) had gone like molten candle wax. I stopped the engine immediately and had to make some rather critical decisions and take action rather quickly. Lets press the pause button now and explain a bit more about the situation. The battery was a relatively new one that had only been fitted the year before. It had been removed during the winter and refitted when required. The trouble was that refitting hadn't included fixing - it was connected but was free to move about on its tray. It had slid along while I was on the slope and shorted out on the red hot exhaust pipe. It hadn't been shorting out long otherwise it would have been a larger fire. There was Henry - in the middle of a straw field which was as dry as a tinder box. All the fields around me were also straw so if the old girl went up so would half the countryside. What did Henry do? Well I had a small fire on board which could have easily developed into something very much larger.

Everything was there for a great calamity - fire plus a lot of combustible material. Every gentleman (I use the word cautiously) knows that he has a liquid container internally. The trouble was that it was threequarters empty - it was a very hot day! Nevertheless it was a liquid that would reduce or even extinguish flames. Would only a quarter tank be sufficient? After a careful look around to confirm that there was no-one within sight - at least 600 metres - I decided that I didn't have any choice and did what was required. The flexible bit didn't seem very keen on the job though and because it was fine weather there wasn't a lot of pressure! Nevertheless it nearly completed the job but a bit more in the tank would have been better. It was sufficient to reduce the temperature and the few flames left just gave up the ghost (wouldn't you?) and the near calamity was over.

Yes it should never have happened in the first place but even Henry makes mistakes and batteries do not seem to one of Henry's strong points (see previous Chairman's waffle). I was able to borrow a spare battery from our Volkswagen pick up truck plus a spare alternator and was back in action an hour and threequarters later. I should now have learnt to make certain that batteries are installed, fixed and treated correctly.

Thats conveniently near the end of a page so I will leave it at that for now and hope to be a bit more organised next time.

Best Wishes, Merry Christmas and a Happy New Year from Henry.

1991 MEMBERSHIP SURVEY
By Des Watson

It is time to report on the analysis of the questionnaire on the 1991 membership renewal and application forms. This survey is dated July 1991.

I have carried out two previous surveys, one in September 1988 and the other in May 1990 and I am including a few of the figures from these old surveys to help illustrate some trends.

Of the 971 members:

13% are employed in education,
10% live outside the UK,
58% are receiving signals from polar orbiters,
33% are receiving signals from Meteosat (or GOES etc.),
1% are receiving HRPT signals or are PDUS for Meteosat,
44% of those receiving satellite signals are experiencing some form of interference.

These figures are in general similar to those of last year. There has been a slight increase in the number of RIG members experiencing interference (40% to 44%), but I feel that no real significance can be read into this increase. Nevertheless, as last year, there are several RIG members who are still experiencing very bad interference. But the situation is likely to improve as receiver designers and manufacturers take the problem of interference more seriously.

Of those specifying display equipment (68% of the total):

45% use the YU3UMV framestore,
54% use a microcomputer,
9% use 'normal' fax,
1% use photographic fax,
7% use other types of framestores, and
8% use PCSAT III.

The sum is greater than 100% since some members use more than one display device.

There is a trend away from the use of the YU3UMV framestore, as would be expected. The 1988 and 1990 figures for the use of this framestore are 63% and 50% respectively.

Again, there are some unsurprising trends in the use of microcomputers. Of those specifying a microcomputer (64% of the total):

40% use an IBM PC, XT, AT, PS/2 or clone,
28% use a BBC machine,
11% use an Archimedes,
9% use an Amiga,
8% use an Atari and
3% use a Spectrum.

There is a significant increase in the proportion of RIG members using PC's. The 1988-1990 figures were 7% and 19% respectively.

Of those specifying an antenna for Meteosat reception (33% of the total):

78% use a dish,
30% use a yagi, and
1% use another antenna.

In 1990, just 18% were using a yagi.

Of those specifying a downconverter (32% of the total):

44% use Dartcom,
11% use Microwave Modules,
11% use Timestep,
7% use a home-built downconverter, 6% use LMW,
6% use Martelec,
5% use Maplin, and
10% use other types.

These figures are very similar to those of last year.

This is the first year in which the survey asked about the use of equipment from various manufacturers. Of those specifying a manufacturer (65% of the total):

42% use Dartcom,
28% use Timestep,
23% use Maplin,
21% use Cirkit,
18% use Martelec,
13% use Microwave Modules,
11% use Spacetech,
10% use ICS,
7% use home-built equipment (it must be more than this!),
6% use LMW,
2% use Feedback,
1% use Unilab, and
5% use other manufacturers' systems.

SUMMARY OF REACTION TO COMMITTEE STATEMENT IN RIG 24

A Statement was made by The Committee in RIG 24 referring to events at the Sandown AGM which lead to significant changes in the composition of the Committee. Comment was invited from the membership at large.

Since then 16 letters on the subject have been received and the matter has also been referred to in telephone calls to the Chairman. Opinions have ranged from those extremely concerned at the outcome to those who regard it as positive. This note is an attempt to analyse the content of the correspondence.

I have divided opinions into three categories - the total number does not justify more than this - "Against", "Balanced" and "For".

Against - 2 opinions. Balanced - 7 opinions. For - 7 opinions.

Some examples of "against" comments:- "One new committee member for a long-serving and popular secretary, a treasurer and a long-serving committee member - what a poor swap!" "I see these recent happenings as a major setback and a threat to the achievement of RIG goals." "Balanced" comments:- "I have no objection at all to someone with a commercial interest being on the RIG Committee, provided that these interests are known or declared." "I consider that the Group should continue to allow persons connected professionally with electronic remote imaging to serve on the Committee subject to being properly elected." "I see no reason to bar individuals with commercial interests from the Committee and certainly support the Chairman's decision." "For" comments:- "It would seem to me to be in the Group's interests to include anybody who is prepared to donate their time and experience whilst also being involved in a commercial venture as no doubt they can provide up-to-date information for the benefit of everybody." "In short, I consider that the Chairman's actions in abiding by the rules were absolutely correct. Indeed he would have shown unacceptable weakness had he done otherwise." "A member of the Committee who has close commercial interests can add spice to the Group."

There were some other views expressed by more than one person. These include concern about the AGM always being at the same location - not convenient for many members - and it possibly being dominated by a clique. There was gratitude expressed for the efforts in the past by those who had left the Committee. Finally, there were many statements encouraging RIG for the future and congratulations for what the Group has achieved and is achieving. Ray Godden

COMMITTEE'S COMMENTS...

As can be seen from the above, at least judged by the correspondence received after the statement in RIG 24, the majority of our membership endorse, or at least accept, the outcome of this year's AGM. A minority has deeply-felt reservations; these will not be ignored in making future policy decisions.

The Remote Imaging Group is now in an excellent position in terms of membership and financially. The Newsletter goes from strength-to-strength and is highly regarded world-wide. Inevitably changes in the constitution of the committee will come about; new blood is welcome and essential. Anyone who feels willing and able to advance the aims of the Group should put themselves forward for election.

137-138 Mhz. TO BECOME A SHARED BAND

REF: MOBILE SATELLITE NEWS AUGUST 22, 1991

Mobile Satellite Service and Low Earth Orbits
Receive Chunk of Spectrum

To satisfy requirements for Low Earth Orbits, the report proposed to allocate most of the 137 - 138Mhz. band and the entire 148 - 149.9 Mhz. band and 400.15 - 401 Mhz. band to the Mobile Satellite Services on a shared basis with existing services. For Low Earth Orbits above one Ghz., the report recommended 1613.8 - 1626.5 Mhz. band be allocated on a secondary basis. For longer term Low Earth Orbit requirements, the report said to add Mobile Satellite Services to the entire 1850 to 1990 band on a shared primary basis.

THE GIF PICTURE LIBRARY
By Mike Goodall

Over the past months I have been collecting GIF pictures, primarily of remote images, with a view to starting a picture library on PC computer disc format. At the time of writing I have 6 disks of images on 1.4M HD disks. Each contains up to 10 pics in GIF format that can be displayed on any PC with one of the shareware programs such as VPIC, and with a suitable video card. I have been promised some more pics from abroad, especially Africa, in the near future, and am still interested in receiving pics from any of our overseas members (especially polar orbiter ones, as Meteosat and Goes ones are often transmitted to other parts of the world via Geostationary satellites).

One of the main objects of the library is to enable members with PCs, with or without their own receiving equipment fitted, to be able to enjoy some of the stunning images that many of us take for granted. I can duplicate the disks for any members who require them at no cost other than the return postage (any spare stamps would be appreciated, and will go towards overseas postages). The format that is most convenient is 1.4M 3.5" disks. However any other format (720K 3.5", 1.2M 5.25" or 360K 5.25") can be used, but of course you will not get many images on these. Please send formatted disks to my home address (preferably in re-usable packing, small Jiffy bags or those custom-made disk posting packets are ideal) together with a sticky addressed label for return, and enough stamps to cover the return postage. Please state which disks you would like from the list below. There is no limit to the number you can have duplicated at the moment, but obviously if you have several members who meet regularly in your area, please send for one set and duplicate from these.

The following are available at present:

Disk 1 UK Noaa: in colour (x4)
Disk 2 UK Noaa: most in colour (x5)
Disk 3 Americas: various (x9)
Disk 4 Americas: various (x8)
Disk 5 Americas: various (x6)
Disk 6 Space: Spaceman, Launch, Mars, Venus (x4)
Disk 7 Earth: various HRPT (x7)
Disk 8 Russian Meteor: various (x4)
Disk 99 Shareware versions of viewing and tracking programs (zipped)

As new and better pics arrive, this list may be changed and updated, and is intended as a guide only.

If you are an overseas member, and require copies of the above, please send formatted disks containing your own local pics if at all possible (or ones from a receiving station in your area). There is no need to send return postage from abroad, as I hope to cover this with the few extra stamps I receive from our UK members.

If you have any good pics (col. or monochrome) from polar orbiters, Noaa, Mets or Chinese, please send them in, preferably in GIF form, (DAT or NOAA files are also acceptable) please send them in. Please enclose info on files, i.e. satellite name, date and time, IR or VIS. I can in most cases insert details and your name in text on the GIF file for the library. I hope to be able to publish a new list each time in the RIG magazine, providing I get a good response. It goes without saying, of course, that this service is for non-commercial use only. If you have no viewing program I can supply a copy of some shareware ones (normally latest versions) for you to try, on Disk 99.

Finally, thanks to Steve Padar, in Florida, with whom I regularly correspond, for the excellent pics for the library, as well as some prints from his videoprinter of his HRPT images. If you saw the photos of his shack and receiving set-up you would turn green with envy!

CAN YOU HELP US?

We are looking for cheap supplier of small quantities of UT141 rigid coax for the RIG LNA kits. If you know of such a source please let the Chairman know.

DESERT ISLAND DISKS

James Brown

WARNING: Reading this review could seriously damage your bank balance!)

I keep having this recurring nightmare you see. I'm being interviewed by Sue Lawley for her 'Desert Island Disks' programme - fame at last! She asks me for my first choice of disk and I wax lyrical about a section of a fifteen minute pass of NOAA 11 last September when the temperature in East Anglia hit 34 degrees Celsius. And we sit back and listen to a snippet of the APT transmission. My next choice is a seventeen minute pass of Met 3/4 going up over Greenland, with sampling done at 1200, always best viewed in 1024 x 768, but with zoom you can easily pick out the individual glaciers, and so we listen to a few croaks from Meteor, and so it goes on, until she asks me the final question; 'And in addition to the Bible and the works of Shakespeare what one item would you like to take with you on the desert island?' And smiling broadly, I say, 'Well, if I'm just allowed one item, it would be PROSAT II, the latest offering from Timestep.' But with a cruel laugh she snatches the interface board from my hand and reminds me that there's no electricity on a desert island. The disks drop from my nerveless hands, and Sue's face twists into a more gnarled shape, and just for a moment I seem to know that face and hear the malevolent chuckling of a certain East Anglian farmer, before I awake in a bath of perspiration!

Well, a slight exaggeration perhaps, but when you've had a review copy of PROSAT II for a few weeks, it is very hard to think of doing serious satellite imagery with anything else. This latest package differs from PCSAT3 like a Porsche differs from a Fiesta, though thankfully without the price differential! Timestep have listened well to the end-user and almost every criticism has been met, which leaves reviewers scraping round to find some negative point to make a report sound unbiased. Unless you contemplate moving into the world of HRPT and Primary data, it would not be unjust to suggest that with the right equipment this package will take you to the limits of satellite imagery. If I tell you that it has taken me a good couple of weeks of fairly intensive use to comprehensively test the system, and I still haven't used every facility, you'll be at least partly prepared for a review that has to deal with such complexities as black-body counts and radiation indices as well as more mundane features!

So you've either upgraded from PCSAT3, or you've bought it as a first-time user. You open your 286 or above PC, and introduce it to the new gold-plated, board with DMA (Direct Memory Access) and relay controlled switching of the receiver input channels. It's love at first byte! The software

comes on three high-density disks, and installation is a painless affair with the usual guided prompts to correctly configure your set-up. But this is no bijou programme, you'll need to set aside a good 6 meg or so of hard-disk space for the programme to use, and once you start archiving pictures, you can say good-bye to 2.5 megs for every NOAA or METEOR pass you can't bear to part with, and there'll be a lot of them! Make sure you've a modern hard-drive as well, the manual suggests that the DMA expects a drive with an access time of 28ms or better, but in practice, Les Currington informs me that his 65ms drive copes fine. Starting up the programme takes you into a friendly GUI (Graphical User Interface), with gi-normous icons. You'd best settle it now that your set-up will have a mouse and appropriate driver, but 90% of the package will run from the keyboard if you can't stand having rodents around.

Gone are the rather tedious selection screens of PCSAT3, and the need to dive into SATSHOW, now the choice is simply between the animation part of the package, the Geostationary side or the Polar Orbiters. A quick click gets you swiftly into your choice, and you're in the world of drop-down menus. A spot more configuring using these menus, and you're ready to receive. I opted for the geostationary side first, as I'd lined up a new 'Henry' loop-yagi, (which out-performed my first attempt) on METEOSAT 3, now on line at 50 degrees West. A beautiful L1D format picture of the States built up on the screen in infra-red, and there was Hurricane 'Joe' heading towards New Jersey. The next picture would be a L1C, the same area in visual. As memories of the slow save routine of PCSAT3 came back I thought, what a shame, I would have dearly loved to have captured both pictures. The stop tone came up and I dived for the save menu. I watched the hard-drive light come on, and then about three seconds later in amazement watched it go off. There must have been some error. Received the next frame and saved that, and then went to check. Yes it really had worked. A 512k file was saved and it had wapped it on to my disk like there was no tomorrow. Eventually other duties invariably called for a shutdown, which took some time initially as I kept getting back to a different part of the programme, before eventually being able to exit. After a check with the company, a resetting of my DOS PATH command solved that problem.

Coming back to the programme later I was pleasantly surprised to find it had 'remembered' my option settings, so everything was ready to go, but now I was really itching to explore the polar orbiter section, and METEOR 3/4 was due on a good pass soon. Once again a quick selection via the mouse got the system in a state of readiness, and after just a few chirps of the incoming signal, the picture began to build up on the screen. The aspect ratio was wrong, but who cares, that's put right when you zoom in later. My blood-shot

eyes (hours staring into a monitor have that effect on me!) detected a marked difference from PCSAT3, but what was it? The clouds looked, well, more defined and wispy details clearer. Right, come on trusty frame-store, let's have a contest. Frame-store is now in highest zoom mode and I sit back waiting for the coast of Greenland to come into view. PCSAT3 always failed here in the contest on account of its lower sampling rate, and the frame-store had won endless rosettes! Well it was hard to tell looking at the two screens, but calling up two degrees of zoom on PROSCAN put the matter beyond dispute. The sampling rate had changed, and now even the tiniest of details showed up as clearly as on the frame-store. I seemed to hear a sigh come from the black box! Setting the area of zoom was a doddle, a click on the little pest's button and a box followed it's every move. (You could also use cursor keys). Then a punch on a function key and the zoomed section fills the screen. Comparisons with the Geostationary part of the package show that the lower sampling rate had been retained here, and zoomed images still appear a bit pixely, (framestore perks up again!) whereas on the polar orbiter side even at highest zoom there were no distracting 'stair-case' edges now.

Every conceivable spacecraft has been catered for in whichever direction the birds are travelling, the METEOR variants, OKEAN in its many formats, and of course NOAA, and even FENG YUN should APT ever be resumed. Again settings are memorised, so switch-on takes you back to where you last were. Screens don't scroll on endlessly in receive mode any more - but why should they when you can save a 16-17 minute pass in one go! Well so far we are talking improvements, the cake is excellent, but what about the icing?

Well, how would you like to stick a thermometer in the sea at Bournemouth, or monitor the progress of a pool of sub-zero air moving west out of Siberia? Does the idea of checking to see when the water south of Greenland reaches its critical freezing level appeal to you, or perhaps you'd just like to verify that the Canary islands really did reach 106 Fahrenheit in the shade yesterday? Has this man gone crazy you ask? Well belonging to RIG certainly makes that a possibility!!, but every one of those scenarios is now possible using the infra-red section of a NOAA pass, calibrated on every pass to within a couple of degrees from the telemetry information that most of us would ignore. If you don't want to make your head hurt with the details, skip to the next paragraph, but if you want to know what the programmer must have wrestled with, read on... Technically speaking temperature analysis has always been possible, but no-one to my knowledge has ever taken the time and trouble to make this a reality. If my NOAA manuals are still up to date, the satellite's scanning radiometer rapidly samples data from a space view, a known cold calibration target, and an internal warm target, and sets the zero level whilst

viewing space. The output of the radiometer during the remainder of the scan is equal to the difference in detected energy between space and the radiating surface (earth). My guess would be that the programme measures the modulation index in the telemetry wedge on successive 'frames' and firstly checks that you've selected the infra-red section by checking the channel ID wedge, then it identifies those wedges which are the outputs of the four platinum resistance thermometers embedded in the spacecraft housing and which monitor the temperature of the known warm target, and the zero modulation reference wedge (cold space). It is then possible to ascertain the instrument response curve, and hence the temperature being 'seen'. Remember that the APT is not a separate system from HRPT, but an averaged and selective output of the HRPT telemetry, so although it is inferior in quality, it is no less reliable and repeatable. Having said all that, I'm still amazed that a package for the market we amateurs represent, could contain such a powerful and sophisticated tool.

So wiggle your mouse around and regardless of what palette you've been playing with, a little box will give you a reading taken from the data file stored on the hard-disk, and remember that's at real 8 bit 256 level detail! Many a picture tells a story is the saying, and this has been kept firmly in mind. Bring up the temperature slice option, and you'll see the screen burst into colour as selected levels are assigned a colour, with a calibrated scale at the side, and why not go mad and have the colour and the mouse identifying individual pixel levels at the same time - it's all possible! I could only wish that RIG had a colour centre-fold to show the incredible difference assigning colours to the IR scan makes in terms of making sense of the Earth's heat budget. And obviously you can zoom in and out whilst still retaining both the above options. And there's more...

The programme will accept user defined slices and ranges, perfect for analysis of particular thermal effects. And once your file is saved, the digits will be there as the same values for comparison from year to year, so you can even use the package for long-term climatic monitoring!!

Now do you understand my recurring nightmare?! (Ed: Get a grip on yourself man! - Yes sir!)

I pull myself together, and proceed, because if you thought this was fun, just wait for the rest. Filters have been built in to deal with noisy pictures. A recent GOES2 picture was rather noisy, nothing I could do, but running the median filter took out every last noise spike at only a minimal loss of clarity. Great, but use with care. Want to know the value of a pixel, rather than in term of temperature, no problems, just point your mouse and up it comes.

What's the one big thing that Meteosat has to offer over NOAA when the whole area is blanketed with cloud? With Meteosat you still know where you are underneath it all because of the latitude and longitude markings and coast-line grids. Well now your polar orbiter pictures can tell you where you are! By looking at some up-to-date keplers and checking your PC clock (which you've remembered to keep accurately on time), the programme will add an outline grid of latitude and longitude markings to your picture, regardless of what zoom position you're in. You even get to change the colour of the grid if you want! You'll have to remember to save the relevant Keplers with the pictures though, or else next time you load in a picture you'll be doing it with irrelevant satellite data. Is it accurate? As accurate as your keplers and your clock, so for example, by the time my keplers were a couple of months old the gridding was only out a couple of degrees or so. Keplers can be entered manually or semi-automatically, but I experienced difficulties in trying to enter and save data manually. Whilst I'm mentioning time, if you've actually got to go out and earn a crust, and you're thinking there's no point in getting this programme, think again, because you can set the whole thing up to grab a geostationary satellite frame when it's approximately due, and then it'll save the whole thing automatically to hard disk for you. Just a pity that doesn't appear to extend to the Polar orbiter section. Many times can be pre-set. The main shortcoming here seems to be the inability to pre-programme the feeding of the cat, and getting the tea going before you come home.

Seen those amazing 3-D pictures of Meteosat D2 frames on ITV? Now see them for yourself on your own screen with yet another option. See the cirrus appearing to lift off the screen, and thundery clouds tower up towards you. Or try an OKEAN radar pass in this mode....seeing is believing! Try it in a colour palette for further interest!

As far as colouring, brightness, and contrast alteration is concerned, the pre-set palettes of SATSHOW have been retained, as well as the user definable part of the programme, but an interesting new option is the 'equalise' command which given a Meteor 3/4 picture for example does the most amazing resetting of the palette, to give land detail as far north as the British Isles. Spain viewed in zoom mode in this way is reminiscent of the good old days of the Meteor 3 series. An undocumented selection of 'colour off' restores the palette to the default, though in geostationary mode, there doesn't seem to be a way to recover from the HISTOGRAM command, I found this out the hard way!

Other tools include a transect command which graphically represents intensity levels as a user-defined cross-section.

The animation side of the package is almost identical to that released with later editions of PCSAT3, so sufficient to say that although it's back to sixteen grey levels, the user-definable levels, and 'zoom' feature make this a faultless part of the package, and extended memory is recognised and used if available. On my 2meg machine I could get 11 images before the need to access the hard-drive.

The old standard HPlaserjet compatible print-out has been retained for the geostationary side of the package, but it's still a rather unimpressive dither routine. In talking to the company to ascertain why there is no printout in the polar-orbiter section, I got the reply that there already other screen-grabbing print programmes, which couldn't really be bettered. Pizazz Plus! is one, and an updated version is said to support the more recent ET4000 graphic boards. Perhaps the next edition might home in on the print-out side of things.

Well, it's difficult to be critical of a package into which so much has been put, and which puts into our hands such a professional tool. The programme steadfastly refused to fall over, and it never actually crashed on me. One or two minor niggles were reported to Timestep early on, and already they were being corrected, and other minor bugs are being corrected to go out as one overall revision. Time will tell if complete compatibility has been obtained across the huge range of PC's and graphic cards around, but on my 386SX with its new 1Meg Tseng Labs graphics card, it put in a flawless performance.

The area where things do still fall apart as far as I am concerned is the manual. The package isn't rendered inoperable by the poorness of the documentation, far from it, but as far as this reviewer is concerned, the programme deserves far better. The manual lacks depth, and 22 A5 size pages can't hope to adequately explain the workings of the package. The titles of VGASAT IV & MEGANOAA are probably hangovers from separate programmes in their developmental stages and seem to me to add to the confusion for a new-comer, as they aren't self-evident names, and not until page 5 is VGASAT IV explained as a geostationary side of the package, though the menu icons do better here. Everything works as per the manual, except for the F10 zoom out button and a hitch with manual kepler entry, but with such a sophisticated programme, one is left wanting to know so much more. I'm not asking for technicalities which would give away vital information to competitors, but a greater depth. Questions like: What is the accuracy of the temperature calibration? How long a pass does the programme need to capture this data? Why does the second IR channel sometimes broadcast on NOAA 10 & 12 differ, and what is one to make of the temperature data here?

How does the equalise command work? What is a histogram command doing? How does the colour palette work, and how could one set about making up a genuine logarithmic slope? And one last tiny niggle, either the writer or his word-processor dictionary insists on Americanising certain British words like 'programme'. Well, when you're down to nit-picking of this kind, I think you can judge the overall success of the package.

With PCSAT3 still available, we now have a choice, but for serious work I think the choice is gone!

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THE SOVIET AND CHINESE SCENE
Les Currington

It is hoped that by the time you receive this report on your doorstep only a few weeks will have passed and that this will not be the out of date reports which you have been accustomed to in the past due to printer delays. Your reports recently received have been much appreciated and some interesting observations noted.

Dr. Bjorn Bjortorp in Norway heard Feng Yun 1-B on 137.04 Mhz on the 5/9/91 during a pass over Greenland and sent this most interesting description: He first saw a picture with a bright spot with Newton Rings then all went black,followed by a double picture with the normal Chinese edge code (both visible) which looked like a full earth scan picture reflected in a Fairground Mirror. He feels that as the satellite was passing over Greenland it should have been possible to have recognised some of the ground features as Greenland has been showing up very bright and clear recently. He raised the question, was this a pre-recorded dumped picture.? This is a possibility as the Satellite has the ability to record and store data.

Ron Hegben of Dover sent a collection of Disks from his Archimedes collection on which he has been recording Okean transmissions during the last few months; several taken at times when most of us are sleeping. He managed to get an exceptionally good pass taken at 22-05 gmt on the 21/9/91 of the Greenland coast from the Danmark Strait,the West Jan Mayan Ridge to the Greenland sea.

One of our Committee members John Telleck has also managed to record a collection of Okean 3 passes which he has recorded on a video recorder with outstanding results. An article describing how to use a Video Recorder for recording satellite images is included in this addition of RIG.

On 21st September a phone call from Gordon Train of Keswick reported unusual pictures from Meteor 3-4; on checking subsequent transmissions I think it would be difficult to describe the pictures in detail but a part of the pass was like a full earth scan structure passing through a hour glass and emerging from the bottom into a similar shape; another pass looked like a hurricane but covering the entire width of the picture, followed by the more usual cloud structure looking similar to a low contrast IR. This distortion continued until the 24th September when according to a report from Geoff Perry stated: that on the 25th - 27th September the satellite used a continuous small ion thrust jet to lower it's orbit. Prior to the change of orbit some outstanding passes were seen covering the Middle East; during the

period 25/8/91 to 1/9/91 the entire area from the Nile delta, Iraq to the Caspian Sea could be seen in detail.

Satellite report as at the 25th October 1991

Meteor 2-20 90-86 137.85 Mhz
Meteor 2-20 seems to have cleared the synchronising trouble which was reported in the last RIG. Good imagery has been received here in the last few days on a mid-morning north bound pass.

Meteor 3-4 91-30 137.3 Mhz
Meteor 3-4 suffered a loss of visible picture when transmissions resumed after the change in orbit. IR pictures are received in good quality, but on switching to visible only the Sync and grey scale were showing. At the time of writing most orbits visible from the UK are in darkness so until the later part of November we shall not know if all systems are working.

Meteor 3-5 91-56 137.3 Mhz
A week or so prior to the launch of Meteor 3-5 a phone call from Geoff Perry indicated that a launch would take place during the week beginning 15th August. The reason for this advance notice was due to a visit to the launch site of Space News Space Technology Editor, Craig Covault who was to witness a launch of a Meteor. Excellent pictures were seen after launch for several days when transmissions ceased. However on the 10/10/91 transmissions resumed and good IR and VIS pictures have been viewed over several days prior to sending this report.

Meteors 3-3 and **Meteor 2-19** appear to be in parking orbit and will possibly appear when extra coverage is required.

Okean 3 91-39a 137.4 Mhz
This satellite is giving some outstanding radar pictures at unpredictable times. Look out for the passes that skirt the Iceland Greenland area; this appears to be the pass that is giving some outstanding pictures.

KEPLER ELEMENTS
Provided by Max White - Kettering Group

	NOAA 9	NOAA 10	NOAA 11
	137.62 MHz	137.50 MHz	137.62 MHz
	84-123	86-73	88-89
EPOCH OF DATA	91289.49913910	91289.52221527	91289.42880201
ACCELERATION	0.00000538	0.00000672	0.00000802
REV NO.	35265	26382	15758
INCLINATION	99.1650	98.5565	99.0456
R. A. NODE	305.9266	310.6243	245.1928
ECCENTRICITY	0.0016081	0.0012181	0.0012082
ARG OF PERIGEE	84.5452	296.9796	359.5849
MEAN ANOMALY	275.7530	63.0141	0.5370
MEAN MOTION	14.13148923	14.24324417	14.12336064

	NOAA 12	MET 2-16	MET 2-17
	137.50 MHz	137.85 MHz	137.30 MHz
	91-32	87-68	88-05
EPOCH OF DATA	91289.48967556	91283.02197901	91289.15500928
ACCELERATION	0.00000813	0.00000127	0.00000253
REV NO.	2199	20934	18742
INCLINATION	98.7254	82.5544	82.5438
R. A. NODE	317.5162	269.9326	324.0999
ECCENTRICITY	0.0013268	0.0012811	0.0017968
ARG OF PERIGEE	173.1622	354.4558	41.7822
MEAN ANOMALY	186.9744	5.6457	318.4706
MEAN MOTION	14.21627411	13.83839899	13.84547285

	MET 2-18	MET 2-19	MET 2-20
	137.30 MHz	137.85 MHz	137.85 MHz
	89-18	90-57	90-86
EPOCH OF DATA	91282.81972230	91283.00224366	91282.85577101
ACCELERATION	0.00000259	0.00000111	0.00000279
REV NO.	13191	6488	5206
INCLINATION	82.5185	82.5451	82.5244
R. A. NODE	206.2436	267.7445	206.6745
ECCENTRICITY	0.0015303	0.0017401	0.0012731
ARG OF PERIGEE	94.9730	25.2710	285.2860
MEAN ANOMALY	265.3177	334.9297	74.6891
MEAN MOTION	13.84180808	13.84016449	13.83392975

	OKEAN 2	OKEAN 3	MET 3-2
	137.40 MHz	137.40 MHz	137.30 MHz
	90-18		88-64
EPOCH OF DATA	91289.61720472	91289.07344084	91288.06394388
ACCELERATION	0.00004080	0.00002134	0.00000025
REV NO.	8774	1970	15477
INCLINATION	82.5235	82.5244	82.5426
R. A. NODE	8.9399	278.3428	294.3759
ECCENTRICITY	0.0020420	0.0023321	0.0016468
ARG OF PERIGEE	130.2755	190.9139	177.6701
MEAN ANOMALY	230.0239	169.1592	182.4503
MEAN MOTION	14.75775906	14.74165292	13.16932417

	MET 3-3	MET 3-4	MET 3-5
	137.85 MHz	137.30 MHz	137.85 MHz
	89-86	91-30	91-56
EPOCH OF DATA	91282.90859281	91289.06060231	91289.29744431
ACCELERATION	0.00000043	0.00000043	0.00000371
REV NO.	9404	2302	815
INCLINATION	82.5489	82.5468	82.5471
R. A. NODE	293.6117	139.1742	85.2305
ECCENTRICITY	0.0014854	0.0018390	0.0014144
ARG OF PERIGEE	213.5321	110.5058	111.1791
MEAN ANOMALY	146.4863	249.8051	249.0809
MEAN MOTION	13.15963075	13.16688572	13.16787158

SOVIET REFERENCE ORBITS

Simon Goodall

These are the times of north bound equator crossings (in GMT) and longitudes (in degrees west) for four Soviet satellites. They are given at weekly intervals together with the period and the change in longitude per orbit.

MET 2-20
period 104.15 minutes increment 26.17 degrees

```
 2 NOV 10:25  10   9 NOV 09:03   2  16 NOV 09:26  20  23 NOV 08:04  12
30 NOV 06:42   3   7 DEC 05:21 355  14 DEC 05:43  14  21 DEC 04:21   6
28 DEC 02:59 357   4 JAN 03:21  16  11 JAN 01:59 353  18 JAN 00:38 359
```

OKEAN 3
period 97.74 minutes increment 24.57 degrees

```
 2 NOV 15:40  15   9 NOV 13:49   0  16 NOV 13:36  10  23 NOV 11:45 355
30 NOV 11:31   5   7 DEC 11:17  15  14 DEC 09:25   0  21 DEC 09:11  10
28 DEC 07:18 355   4 JAN 07:03   5  11 JAN 06:48  15  18 JAN 04:56   1
```

MET 3-4
period 109.42 minutes increment 27.48 degrees

```
 2 NOV 05:36 358   9 NOV 05:23   7  16 NOV 05:10  15  23 NOV 03:08 356
30 NOV 02:55   5   7 DEC 02:41  13  14 DEC 00:39 355  21 DEC 00:26   3
28 DEC 23:55   9   4 JAN 23:42  18  11 JAN 21:39 359  18 JAN 21:26 353
```

MET 3-5
period 109.41 minutes increment 27.48 degrees

```
 2 NOV 02:09   0   9 NOV 01:55   8  16 NOV 01:41  16  23 NOV 21:20 355
30 NOV 23:06   3   7 DEC 22:51  11  14 DEC 22:37  19  21 DEC 20:34   0
28 DEC 20:19   8   4 JAN 20:05  17  11 JAN 18:01 358  18 JAN 17:47   6
```

ARCHIVING SATELLITE PICTURES

Gordon Train

Anyone using a PC based Weather Satellite system for storing pictures will soon discover that they occupy a lot of Disk space. I'm using PCSAT3, but I'm sure others will be similar, and each picture stored occupies 512kb.

I recently obtained a copy of a software program called LHA, a file compressor. On average I've found that an APT 512kb file can be archived to approx. 350kb. This may not sound dramatic, but it does mean you can archive 3 pictures instead of 2 on a 1.2mb disk, or sometimes fit a picture on a 360k disk.

The most dramatic result was obtained with a copy of a HRPT file I was sent. It reduced to 94kb! presumably because HRPT is noise free.

The software is free! (not even Shareware). I obtained it free with a magazine, but I see it is available from Public Domain suppliers.

Here are two batch files I use to speed up things when archiving. They assume that your pictures are in C:\SATSHOW and archived in C:\LHA, and the pictures have the extension .DAT.

It will only archive one picture at a time: just type ARCHIVE PICTURENAME (no need for .dat). Typing ARCHIVE with no picture name will show you a list of available pictures.
Once the picture has been archived the original is NOT deleted.

```
1  rem archive.bat
2  ECHO OFF
3  CD\SATSHOW
4  IF NOT EXIST %1.DAT GOTO :LIST
5  COPY %1.DAT C:\LHA
6  CLS
7  CD\LHA
8  LHA A %1.dat
9  DEL %1.dat
10 CD\SATSHOW
11 echo DON'T FORGET TO DELETE %1.DAT from C:\SATSHOW
12 GOTO END
13 :LIST
14 DIR *.DAT /W
15 :END
```

EXPAND works in a similar way. Type EXPAND PICTURENAME (again no need for the extension). Typing EXPAND will show you a list of archived pictures.

```
1  REM EXPAND.BAT
2  ECHO OFF
3  CLS
4  CD\LHA
5  IF NOT EXIST %1.LZH GOTO :LIST
6  LHA E %1 %1.DAT
7  CD\SATSHOW
8  COPY C:\LHA\%1.DAT
9  CD\LHA
10 DEL %1.DAT
11 echo DON'T FORGET TO DELETE %1.LZH FROM C:\LHA
12 :LIST
13 DIR *.LZH/W
14 :END
```

Another tip for users with 2mb of RAM available is to set up a RAMDRIVE of 512kb to temporarily store pictures. This is useful to store the first half of a picture and minimise the loss of part of the second half. Storing to Hard Disk takes 20 seconds compared to 4 seconds to RAMDRIVE.

I'm using MSDOS 5 and ADDED:

```
dos=high
devicehigh=c:\dos\ramdrive.sys 512/e
        to my config.sys.
```

When saving, save to drive D: and call the file something simple like 1.dat. When you've saved the second half of the picture to disk, copy d:\1.dat c:\satshow\picturename.dat and delete 1.dat from d:.

FOR SALE...

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Phone for availability: Malcolm Grant, G7HPE, 0536 520457
(WANTED) Satellite RX, Downconverter, etc.

NOISE FIGURE... FACT OR FRICTION ?

Dave Cawley

Introduction

There have been many articles on very low noise figure 1.7Ghz preamplifiers. Recently noise figures of under 1.0dB and even less than 0.3dB have been talked about in Europe and the USA.

I decided to get Greg Ehrler to let me have a selected HEMP LNA built by him. This was purchased as a tested and selected unit and brought back to the UK by a friend. Greg measured the noise figure at 0.26dB !! Measurements were made on a variety of receivers and with a HP 346A noise figure source.

Signal to noise measurements were made with the new Marconi 2030 2.7GHz signal generator. A reference preamplifier made by my company of 1.7dB noise figure was also used. Despite claims, most preamplifiers and convertors in use by amateurs actually have an "in system" noise figure of around 1.7dB, so this was considered a fair test.

Let's ask for a moment what these are going to be used for. To improve your image from Meteosat ? To make a bad system good ? To impress your friends and neighbours ? Or for serious use in digital imaging systems ? These applications are developed below.

To improve your image from Meteosat.

Meteosat APT transmissions look awful if the signal to noise is less than 20dB. At this point most receivers are well above threshold and are producing stable but not completely noise free reception.

If you are getting a noisy image then your signal to noise is probably about 20dB and clearly needs improving. Substituting the 0.26dB LNA for the 1.7dB LNA gave a 2.0dB improvement bringing the signal to noise up to 22dB. Hardly worth the time and trouble ! In this case the dish and feed horn efficiency were well down. Improving the feed horn efficiency and accurately positioning the dish made a greater improvement than the 0.23dB preamplifier.

To make a bad system good.

Bearing in mind the 2.0dB improvement this is not really practical, unless

your signal is below threshold. If you are getting a really noisy signal then a very low noise preamplifier will definitely help. Because of the FM threshold effect a considerable improvement can be made if the signal is brought from below threshold to above threshold. However you still will not have a noise free image. This may be acceptable if you need a really small antenna system though. So for most users, improve the rest of the system first.

To impress your friends and neighbours.
Without any doubt, claiming a 0.23dB noise figure preamplifier will make the rest of the world envious !

For serious use in Digital Imaging systems.
At last, the real use ! Digital systems have really only three distinct states. 1) Above threshold and totally noise free. 2) Noisy. 3) Nothing there at all. The difference between totally noise free and nothing at all can be just 1.0 dB or less. Clearly an improvement in system noise figure can make the difference between nothing at all, and totally stunning HRPT or PDUS images, a real improvement. The designers of these super low noise LNA's in the USA are all using Digital Imaging Systems.

Some pitfalls in noise measurement and system design.
Described below is a list of 23 parameters that will affect the noise performance of a Meteosat APT system.

Dish size.
Not as silly as it seems. Simply changing from a 0.9M to a 1.25M will give you nearly 3dB extra. Much more than changing to any low noise preamplifier.

Dish efficiency.
Dishes are normally quoted as 55% efficient. Has your dish got any dents in it and does it move in the wind. 0.5dB is easy to get by improving an iffy dish.

Dish pointing accuracy.
After 6 months our 1.8M dish had moved far enough to lose 1.5dB despite being weighed down with extremely solid concrete blocks. When did you last check yours ?

Polarisation of the signal.
Unless the satellite appears due South of your location there will be a loss of signal if your horn feed probe is not adjusted. Meteosat 3 over the Atlantic comes up nearly 2 dB if the horn feed is rotated to match the incoming signal. TV satellite systems that have steerable dishes, always have adjustable polarity, not just horizontal and vertical !

Obstructions.
Is your line of sight path really clear ? A small bush in the way of Meteosat 3 over the atlantic, gave a 0.5dB improvement when it was cut down.

Horn efficiency.
A horn is not just any old coffee tin. It has to properly illuminate the dish it is working with. Offset dishes in particular are very difficult to feed efficiently. Beware that matching the horn radiation angle to the dish will give far more than simply adjusting the probe length. Also check that the horn is actually in the focal point. Most dishes have curved edges making the diameter difficult to measure, and hence the calculation for focal point is not going to be correct. Adjust the position with a signal strength meter.

Preamp noise figure.
In practice anything better that 2.0dB is fine for APT. Remember that going from a 1.7dB to a 0.26dB will only give you a total of 2.0dB improvement. Timestep now have sample devices with a guaranteed noise figure of 0.13dB ! Where will it end ? Go for the lowest noise figure you can afford AFTER checking all the other items here, most give you gain for free !

Preamp gain.
A preamplifier needs to dominate noise performance and overcome feeder losses. Try a shorter feeder run and take the receiver outside. If there is any improvement then you are short of gain. To get the last ounce out of a system, a preamplifier will probably need in excess of 20dB gain.

Preamplifier Stability.
There is much, much more to this heading than you would think. OK so your super low noise amp measures very well from a 50 ohm load. Your horn feed gives an excellent match at 1.7Ghz, but what does it look like at all other frequencies ? Appalling, is the answer. The preamplifier MUST be stable under all loads. The most common fault is a preamplifier going mildly unstable at any frequency up to +/- 800Mhz from 1.7Ghz. This instability may not be heard but it will de-sensitise or worst still block the following receiver.

Preamp matching.
Hewlett Packard have issued many notes on this subject. The ARRL VHF/UHF conventions have published many transcripts as well. If your preamplifier has been set up on the bench to give the lowest possible noise figure from 50 ohms and your dish/feed system is not 50 ohms, your actual noise figure will be a lot higher than you think. GaAs FET's are particularly prone to mismatch. You can lose everything you might have gained by giving the preamplifier a bad match. If you are using a home made feed system

NOAA 9 PERIOD 102.0 MINS FREQUENCY 137.62MHz

NOTE NEW FORMAT! - TIME OF ACQUISITION OF SIGNAL - SOUTHERN BRITAIN

1991			1991			1992		
01/11	07.23	17.14	01/12	07.52	17.43	01/01	08.08	17.58
02/11	07.10	17.01	02/12	07.39	17.30	02/01	07.55	17.46
03/11	06.58	18.30	03/12	07.27	17.17	03/01	07.42	17.33
04/11	06.45	18.18	04/12	07.14	17.05	04/01	07.30	17.20
05/11	08.14	18.05	05/12	07.01	18.34	05/01	07.17	17.08
06/11	08.02	17.53	06/12	06.49	18.21	06/01	07.04	18.37
07/11	07.49	17.40	07/12	08.18	18.09	07/01	06.52	18.24
08/11	07.37	17.27	08/12	08.05	17.56	08/01	08.21	18.12
09/11	07.24	17.15	09/12	07.53	17.43	09/01	08.08	17.59
10/11	07.11	17.02	10/12	07.40	17.31	10/01	07.56	17.46
11/11	06.59	18.31	11/12	07.27	17.18	11/01	07.43	17.34
12/11	06.46	18.19	12/12	07.15	17.06	12/01	07.30	17.21
13/11	08.15	18.06	13/12	07.02	18.35	13/01	07.18	17.08
14/11	08.03	17.53	14/12	06.50	18.22	14/01	07.05	18.38
15/11	07.50	17.41	15/12	08.19	18.10	15/01	06.52	18.25
16/11	07.37	18.28	16/12	08.06	17.57	16/01	08.22	18.12
17/11	07.25	17.16	17/12	07.54	17.44	17/01	08.09	17.60
18/11	07.12	17.03	18/12	07.41	17.32	18/01	07.56	17.47
19/11	07.00	18.32	19/12	07.28	17.19	19/01	07.44	17.34
20/11	06.47	18.20	20/12	07.16	17.06	20/01	07.31	17.22
21/11	08.16	18.07	21/12	07.03	18.36	21/01	07.18	17.09
22/11	08.04	17.54	22/12	06.50	18.23	22/01	07.06	18.38
23/11	07.51	17.42	23/12	08.20	18.10	23/01	06.53	18.26
24/11	07.38	17.29	24/12	08.07	17.58	24/01	08.22	18.13
25/11	07.26	17.16	25/12	07.54	17.45	25/01	08.10	18.00
26/11	07.13	17.04	26/12	07.42	17.32	26/01	07.57	17.48
27/11	07.00	18.33	27/12	07.29	17.20	27/01	07.44	17.35
28/11	06.48	18.21	28/12	07.16	17.07	28/01	07.32	17.22
29/11	08.17	18.08	29/12	07.04	18.36	29/01	07.19	17.10
30/11	08.05	17.55	30/12	06.51	18.24	30/01	07.06	18.39
----------			31/12	08.20	18.11	31/01	06.54	18.26

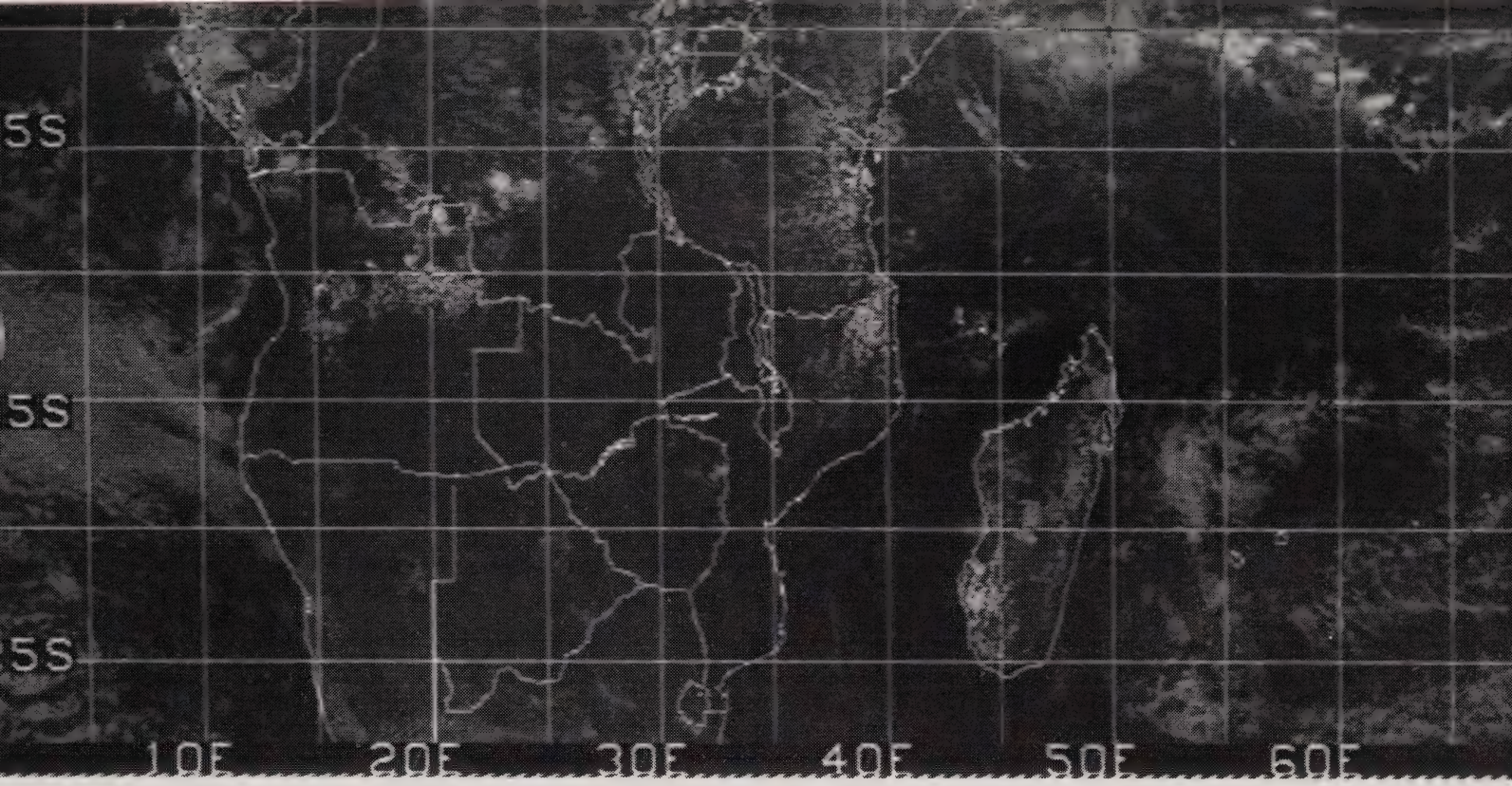
MORNING PASSES ARE SOUTHBOUND EVENING PASSES ARE NORTHBOUND

NOAA 10 PERIOD 101.2 MINS FREQUENCY 137.50MHz

NOTE NEW FORMAT! - TIME OF ACQUISITION OF SIGNAL - SOUTHERN BRITAIN

1991			1991			1992		
01/11	08.20	18.06	01/12	08.14	18.00	01/01	07.44	17.30
02/11	07.57	17.43	02/12	07.50	17.36	02/01	07.20	18.47
03/11	07.33	17.19	03/12	07.27	18.54	03/01	06.56	18.23
04/11	07.09	18.36	04/12	07.03	18.30	04/01	08.13	17.59
05/11	08.26	18.12	05/12	08.20	18.06	05/01	07.49	17.35
06/11	08.03	17.49	06/12	07.56	17.42	06/01	07.26	17.11
07/11	07.39	17.25	07/12	07.32	17.18	07/01	07.02	18.29
08/11	07.15	18.42	08/12	07.09	18.36	08/01	08.19	18.05
09/11	06.51	18.18	09/12	08.26	18.12	09/01	07.55	17.41
10/11	08.09	17.54	10/12	08.02	17.48	10/01	07.31	17.17
11/11	07.45	17.31	11/12	07.38	17.24	11/01	07.07	18.35
12/11	07.21	18.48	12/12	07.14	18.42	12/01	08.25	18.11
13/11	06.57	18.24	13/12	06.51	18.18	13/01	08.01	17.47
14/11	08.14	18.00	14/12	08.08	17.54	14/01	07.37	17.23
15/11	07.51	17.37	15/12	07.44	17.30	15/01	07.13	18.40
16/11	07.27	17.13	16/12	07.20	18.47	16/01	06.49	18.16
17/11	07.03	18.30	17/12	06.57	18.24	17/01	08.07	17.53
18/11	08.20	18.06	18/12	08.14	17.60	18/01	07.43	17.29
19/11	07.56	17.42	19/12	07.50	17.36	19/01	07.19	17.05
20/11	07.33	18.60	20/12	07.26	17.12	20/01	06.55	18.22
21/11	07.09	18.36	21/12	07.02	18.29	21/01	08.12	17.58
22/11	08.26	18.12	22/12	08.20	18.06	22/01	07.49	17.34
23/11	08.02	17.48	23/12	07.56	17.42	23/01	07.25	17.11
24/11	07.39	17.25	24/12	07.32	17.18	24/01	07.01	18.28
25/11	07.15	18.42	25/12	07.08	18.35	25/01	08.18	18.04
26/11	06.51	18.18	26/12	08.25	18.11	26/01	07.54	17.40
27/11	08.08	17.54	27/12	08.02	17.48	27/01	07.30	17.16
28/11	07.45	17.30	28/12	07.38	17.24	28/01	07.07	18.34
29/11	07.21	18.48	29/12	07.14	18.41	29/01	08.24	18.10
30/11	06.57	18.24	30/12	06.50	18.17	30/01	08.00	17.46
----------			31/12	08.07	17.53	31/01	07.36	17.22

MORNING PASSES ARE SOUTHBOUND EVENING PASSES ARE NORTHBOUND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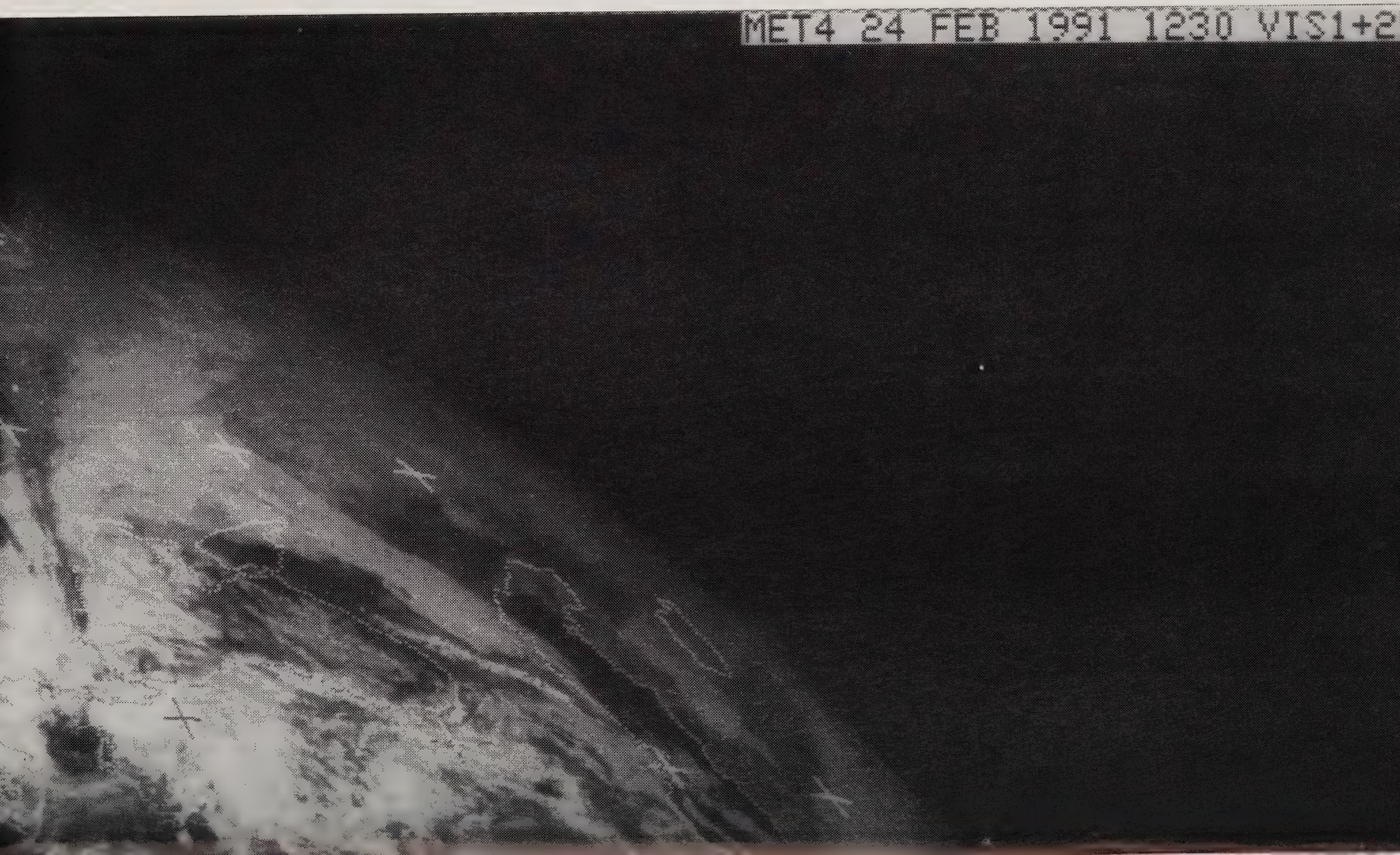
60E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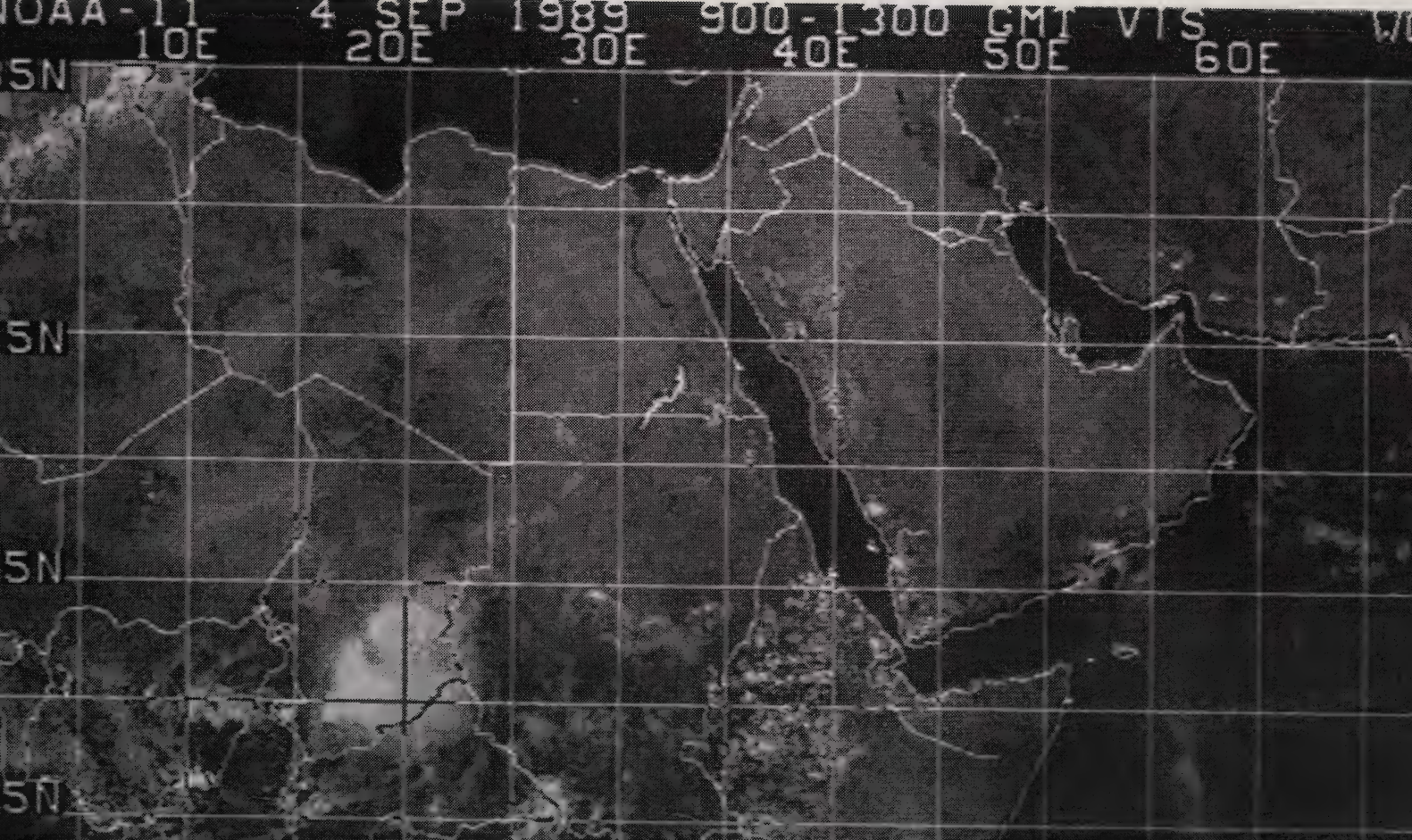
NOAA-11 4 SEP 1989 900-1300 GMT VIS
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NOAA 11 PERIOD 102.0 MINS FREQUENCY 137.62MHz

NOTE NEW FORMAT! - TIME OF ACQUISITION OF SIGNAL - SOUTHERN BRITAIN

1991			1991			1992		
01/11	02.31	14.04	01/12	03.24	13.15	01/01	04.05	13.56
02/11	04.01	13.52	02/12	03.13	13.04	02/01	03.54	13.45
03/11	03.49	13.40	03/12	03.01	14.34	03/01	03.42	13.33
04/11	03.37	13.28	04/12	02.49	14.22	04/01	03.30	13.21
05/11	03.26	13.17	05/12	02.37	14.10	05/01	03.18	13.09
06/11	03.14	13.05	06/12	04.07	13.58	06/01	03.06	12.57
07/11	03.02	12.53	07/12	03.55	13.46	07/01	02.54	14.27
08/11	02.50	14.23	08/12	03.44	13.35	08/01	02.42	14.16
09/11	02.38	14.11	09/12	03.32	13.23	09/01	04.13	14.04
10/11	04.08	13.60	10/12	03.20	13.11	10/01	04.01	13.52
11/11	03.57	13.48	11/12	03.08	12.59	11/01	03.49	13.40
12/11	03.45	13.36	12/12	02.56	14.29	12/01	03.37	13.28
13/11	03.33	13.24	13/12	02.44	14.17	13/01	03.25	13.16
14/11	03.21	13.12	14/12	04.15	14.06	14/01	03.13	13.04
15/11	03.09	13.01	15/12	04.03	13.54	15/01	03.01	14.35
16/11	02.58	14.31	16/12	03.51	13.42	16/01	02.50	14.23
17/11	02.46	14.19	17/12	03.39	13.30	17/01	02.38	14.11
18/11	02.34	14.07	18/12	03.27	13.18	18/01	04.08	13.59
19/11	04.04	13.55	19/12	03.15	13.06	19/01	03.56	13.47
20/11	03.52	13.43	20/12	03.04	12.55	20/01	03.44	13.35
21/11	03.41	13.32	21/12	02.52	14.25	21/01	03.32	13.23
22/11	03.29	13.20	22/12	02.40	14.13	22/01	03.20	13.11
23/11	03.17	13.08	23/12	04.10	14.01	23/01	03.09	13.00
24/11	03.05	12.56	24/12	03.58	13.49	24/01	02.57	14.30
25/11	02.53	14.26	25/12	03.46	13.37	25/01	02.45	14.18
26/11	02.41	14.15	26/12	03.35	13.26	26/01	04.15	14.06
27/11	04.12	14.03	27/12	03.23	13.14	27/01	04.03	13.54
28/11	03.60	13.51	28/12	03.11	13.02	28/01	03.51	13.42
29/11	03.48	13.39	29/12	02.59	14.32	29/01	03.39	13.30
30/11	03.36	13.27	30/12	02.47	14.20	30/01	03.27	13.18
----------			31/12	02.35	14.08	31/01	03.16	13.07

MORNING PASSES ARE SOUTHBOUND EVENING PASSES ARE NORTHBOUND

NOAA 12 PERIOD 101.3 MINS FREQUENCY 137.50MHz

NOTE NEW FORMAT! - TIME OF ACQUISITION OF SIGNAL - SOUTHERN BRITAIN

1991			1991			1992		
01/11	08.17	18.04	01/12	07.51	19.19	01/01	08.44	18.31
02/11	07.56	17.43	02/12	07.30	18.58	02/01	08.23	18.10
03/11	07.34	19.03	03/12	08.50	18.37	03/01	08.02	17.49
04/11	08.55	18.42	04/12	08.29	18.16	04/01	07.41	19.09
05/11	08.34	18.21	05/12	08.07	17.55	05/01	07.20	18.48
06/11	08.12	17.59	06/12	07.46	19.15	06/01	08.40	18.27
07/11	07.51	19.20	07/12	07.25	18.54	07/01	08.19	18.06
08/11	07.30	18.59	08/12	08.45	18.32	08/01	07.57	17.44
09/11	08.50	18.37	09/12	08.24	18.11	09/01	07.36	19.05
10/11	08.29	18.16	10/12	08.03	17.50	10/01	08.56	18.43
11/11	08.08	17.55	11/12	07.42	19.10	11/01	08.35	18.22
12/11	07.47	19.15	12/12	07.21	18.49	12/01	08.14	18.01
13/11	07.26	18.54	13/12	08.41	18.28	13/01	07.53	17.40
14/11	08.46	18.33	14/12	08.20	18.07	14/01	07.32	19.00
15/11	08.25	18.12	15/12	07.59	17.46	15/01	08.52	18.39
16/11	08.04	17.51	16/12	07.37	19.06	16/01	08.31	18.18
17/11	07.43	19.11	17/12	08.58	18.45	17/01	08.09	17.57
18/11	07.22	18.50	18/12	08.37	18.24	18/01	07.48	19.17
19/11	08.42	18.29	19/12	08.15	18.02	19/01	07.27	18.55
20/11	08.21	18.08	20/12	07.54	17.41	20/01	08.47	18.34
21/11	07.59	17.47	21/12	07.33	19.01	21/01	08.26	18.13
22/11	07.38	19.07	22/12	08.53	18.40	22/01	08.05	17.52
23/11	08.59	18.46	23/12	08.32	18.19	23/01	07.44	19.12
24/11	08.37	18.24	24/12	08.11	17.58	24/01	07.22	18.51
25/11	08.16	18.03	25/12	07.50	19.18	25/01	08.43	18.30
26/11	07.55	17.42	26/12	07.29	18.57	26/01	08.21	18.09
27/11	07.34	19.02	27/12	08.49	18.36	27/01	08.00	17.47
28/11	08.54	18.41	28/12	08.28	18.15	28/01	07.39	19.07
29/11	08.33	18.20	29/12	08.06	17.53	29/01	07.18	18.46
30/11	08.12	17.59	30/12	07.45	19.14	30/01	08.38	18.25
----------			31/12	07.24	18.25	31/01	08.17	18.04

MORNING PASSES ARE SOUTHBOUND EVENING PASSES ARE NORTHBOUND

attach the preamplifier and adjust the probe length for maximum signal to noise from the satellite, this is of course NOT the same as maximum signal. You may have to reduce the signal to do this. I favour putting an obstruction (a tree or hedge) in the way of the dish to reduce the signal, instead of turning it away from the satellite giving ambiguous results. [Ed: RIG are looking into the possibility of providing precision tuned conifers as attenuators, complete with secateurs for final trimming adjustments!]

Preamp selectivity and overload.
A high gain preamplifier is liable to overload if it doesn't have any selectivity. The JEASUG and RIG preamplifier can have over 30dB of gain from 100 to 2000Mhz. Any strong signal will cause hard to find problems. A 1.7GHZ band pass filter between two stages will stop cellular phones blocking the system.

Measurement accuracy and repeatability.
If you measure your preamplifier now, and then in a months time, will it be the same ? A lot of test equipment is not reliable enough for repeatable results. Even if the results are stable are they right in the first place ? How do you know that a 0.7dB Brand X preamplifier is the same as a Brand Y 0.7dB preamplifier ? At Timestep we use a Hewlett Packard 346A 10Mhz to 18GHz Noise Source. As we have mentioned above GaAs FET's are very sensitive to load. Most noise sources including other Hewlett Packard ones, change impedance when measurements take place. This change in impedance gives a false noise figure reading. Hewlett Packard specifically recommend the 346A for GaAs FET measurements. Other HP and Noise Com sources may not give accurate results.

Moisture problems.
Your nice shiny preamplifier works fine for a month, then you notice slight noise, what gives ? Simple really, it may have water in it, a quick dry out with a hair dryer and a spray of WD40 will perform wonders.

Heat problems.
A preamplifier is usually measured at 21 degrees centigrade. It can get very cold at night and extremely hot midday. Check that your preamplifier really is temperature stable. Put it in the freezer over night. Put it straight on the dish and look at the results. Leave it an hour to get warm and go through dew point, is it still the same ?

Cable loss.
Cables such as UR67 are not as low loss as you would think. Pope H100 is the very best. Beware cable quoted at 1296MHz, the measurements have to be at 1.7GHz. There is a cable we measured that had good loss at 1296MHz

and terrible loss at 1.7GHz ! Some cheaper cable suffers from moisture ingress and depending on the outer braid construction can fall off rapidly above 1500MHz.

Connector problems.
One of the biggest problems we have is old Pope H100 with N connectors. They simply fall off after 2 years ! It is possible to loose about 2 dB through bad connections or more if you don't fit them correctly. (Thanks to James Brown for reminding me of this point).

Receiver noise figure.
This is really tied up with feeder loss and preamplifier gain. The last batch of Microwave Module convertors were really bad. Even good preamplifiers do not show the improvement they should on receivers with bad noise figures. In most cases though, convertors and receivers have adequate noise figures.

Image filtering.
A Meteosat convertor with a 137.5MHz output will have a local oscillator of 1553.5Mhz making the image at 1416.0MHz. Not that far away ! Unless the mixer is protected from this noise a 3.0dB increase in noise to signal can be expected. The noise can be generated in the preamplifier AND the receiver front end. To get the best results a filter is needed in the preamplifier to stop it blocking and a filter is needed before the mixer to remove image noise.

Receiver bandwidth.
Most NOAA APT receivers have 50KHz bandwidth to accommodate the deviation and Doppler from the polar orbiting satellites. Meteosat has lower deviation and a 30KHz bandwidth can be used with no problems and a slight improvement in signal to noise.

Receiver threshold (demodulator).
Take a dish and preamplifier, connect it to two different receivers. You get the same results; right ? WRONG ! First of all they probably have different IF bandwidths. However the threshold performance of a receiver also depends on it's demodulation characteristics. A phase locked loop discriminator will give fair signal to noise at low signal strengths and adequate signal to noise at high signal strengths. A quadrature discriminator will give poor results at low signal strengths and very high signal to noise at high signal strengths. Which is best ? Well if you want to image process or look at tiny detail in clouds you need the highest possible signal to noise.

AF filtering.
Somewhere in the system audio filtering must take place to remove high frequency noise. This can be in the receiver or in the framestore or computer card. It is important to have at least 4 poles of low pass filtering somewhere.

Data demodulation.
The data demodulator should be "locked" to the incoming data. This will give a consistently low noise image on the screen. Some systems sample at random and are very susceptible to noise. Timing and data demodulation locked to the satellites 2.4KHz'ish subcarrier always gives the best results.

Screen resolution and number of greys.
In general the higher the screen resolution the less noise is perceptible. A noisy pixel in a line of 320 will stand out. A noisy pixel in a line of 1024 won't be so noticeable. If you have only 16 grey levels and the image is D1 with lots of peak white. Think what happens if noise causes a pixel to go from level 16 to level 15, a big pixel 6 % darker is the answer. In a 64 grey scale image it may go from 64 to 63, just 1.5% darker. A 400% improvement in image quality ! So wherever possible go for the highest screen resolution combined with the maximum number of grey levels.

Overview.
There are lots of ways of improving your image. By all means go for a low noise preamplifier, and check that everything else is as good as it can be. Get your system working better in the dark winter months ahead by carefully considering the 23 points listed. For Digital imaging systems go through absolutely EVERYTHING in the list !

Conclusion.
So, what we need is a perfect system and a preamplifier that works under all conditions, has bandpass filtering, is waterproof, has high gain, is tested on the best test equipment and of course has a really low noise figure. Impossible ?? Not quite ! Look for the Timestep advert next month !

HIGH RESOLUTION FRAMESTORE

Gordon Fleming

Having observed the weather satellite scene over the last three years or so could have lead you to believe that the situation vis-a-vis FRAMESTORE VERSUS COMPUTER SYSTEM was a foregone conclusion in that framestores were yesterdays technology and the flexibility and resolution of the computer has made the framestore obsolete.

Certainly you could be forgiven for thinking along these lines, as the framestore up until now has been basically a low resolution picture store and little more, whereas computer systems have advanced to the stage where HRPT is available for all those who can afford to pay, added to which are the facilities of contrast stretching - filtering and colour enhancement. "No contest" I hear you say.

If you already own a personal computer it is only a short hop to acquire the relevant hardware and software to access weather images. But what about those who don't own a PC; are they to be denied the access to weather images just because they cannot afford a PC or because they do not have the technical expertise to build themselves a framestore? No, fortunately not any longer.

Why!- because hopefully, early next year you should be able to buy a framestore with a difference. Out has gone the old low resolution one and in its place we now have a high resolution version which, when it's populated with sufficient RAM, will be capable of High Resolution Images and Animation.

What is exciting is its low basic price, £275, as a ready built module or around £300 for a boxed version. 1024 x 1024 x 256 Greyscales, 16 times the resolution of the YU3UMV framestore, at this resolution and this price it has to be the "BEST BANG FOR A BUCK" as the Americans would say.

The basic unit will be supplied with 1 Megabyte of RAM, but will allow RAM modules to be plugged in up to 8 Megabytes, providing over one hours NOAA Storage or 8 METEOSAT frames.

As a fully stand-alone unit you will have inputs for signals from your receiver or your tape recorder and an output to a monitor. It will have smooth X - Y Scrolling as well as a ZOOM Scroll facility.

This new framestore is currently at the MKII stage and who knows what the

future holds for it. Although the framestore currently uses 1 Megabyte Ram Modules, its designer says, with some slight adjustment to address lines as it is already pin compatible, it should be possible to plug in 4 Megabyte modules further enhancing its capabilities.

Its reassuring to think that there are people around who haven't given up on framestores and I would like to take this opportunity to thank the framestores designer David Woods, and Martelec who will be marketing it. We now have an opportunity to get into high resolution images without having to first buy a PC.

We get lots of questions when we are at the rallies about framestores, so hopefully this piece of news will please framestore devotees and perhaps interest those who have computer systems into now purchasing a framestore which they can have ticking away in the background and releasing their computer to do some DTP or word processing.

From the brief glance I had of the MKI version and the glimpse of some pre-released literature, it is difficult to imagine what the final product will look like. I do hope it will become available when it was promised for and that buyers are satisfied with their purchase.

In the first instance please telephone this number for further details:- 0420 82752 or write to MARTELEC COMMUNICATION SYSTEMS, THE ACORNS, WYCK LANE, EAST WORLDHAM, ALTON, HAMPSHIRE GU34 3AW.

I hope I am not too premature in my expectation for this product and I hope that if any of you members out there acquire one of these that you will write in and let us know what you feel about the framestore and its operation, and whether you feel it is value for money. [Ed: Manufacturers note: RIG welcomes the submission of products for review, please contact Henry Neale in the first instance.]

Like any new product there are generally teething troubles to overcome and further development stages which improve on the earlier prototype. But naturally I would hope that any product released onto the market will have progressed to the stage where it is a fairly reliable product. Neither RIG nor the author of this article have had an opportunity yet to see the finished marketable product, so with the usual reservations I hope that buyers will satisfy them-selves that the product will do what it is supposed to do before parting with any money. That's why the telephone number and address of Martelec have been included in this article, and not as a sales pitch for the company.

HI-FI AUDIO RECORDING OF SATELLITE IMAGES

John Tellick

You may have read my article in RIG 24 about extending the reception range of signals from polar orbiters giving you almost noise free reception from AOS to LOS. This means a pass time of more than 15 minutes for NOAA satellites and more than 20 minutes for a Meteor.

About this time I purchased a computer system for displaying images and thought 'this is it, I can get the whole pass, now I can store it in full resolution'. In fact two problems emerged to shatter my joy; you can only store part of a pass on a computer - at the moment, and RF interference from my computer put nice strong patterns on my distant signals, although it was O.K. overhead where the signal; was strong. What to do? Switch the computer off and record the signals on tape. As you all know if you have tried it, using an ordinary tape recorder works but the results are not very satisfactory. There is however a way to obtain CD quality audio recordings without Stephen Padar's DAT machine (See RIG 24) and the answer may be in your living room right now! -

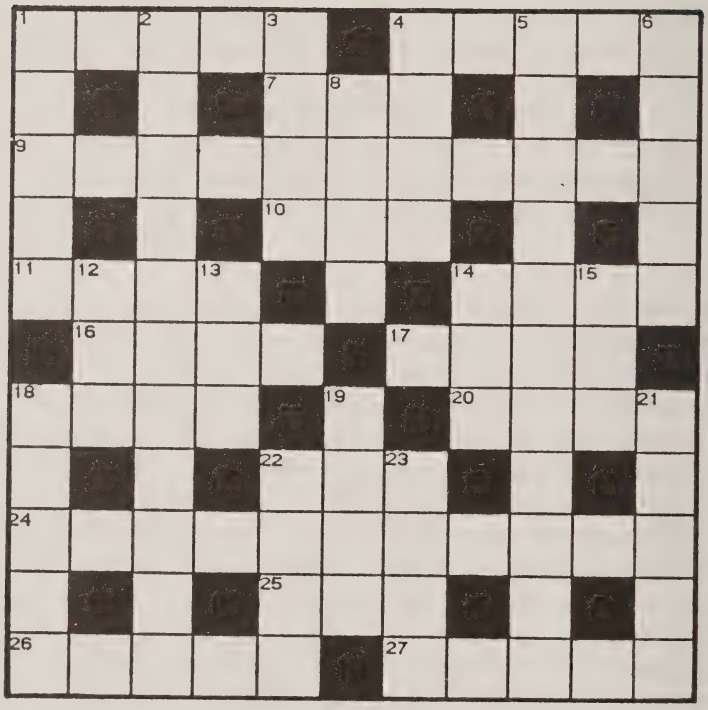
A video recorder. With the advent of NICAM stereo TV it didn't take the domestic VTR manufacturers long to put an audio decoder in their machines. Now with such superb sound fidelity the last thing you want to do is record the audio on LO-FI longitudinal tracks. So they FM the audio and record it along with the video. This gives, in the case of my recorder, a Dynamic Range of more than 90 db's and a Frequency Response of 20Hz to 20kHz. Wow and flutter of 0.005% Wrms. The recorder I have is a Panasonic NV-F65B. Now as a BETAMAX man I have to say for a VHS the pictures are very good and the audio of course superb. But what this recorder allows you to do is record HI-FI sound in an 'audio only LP mode' which is how I use it, feeding audio via the line-in socket. The recorder is fed directly from a Dartcom receiver and on replay you just feed your frame store or computer from the Audio Line Out. Like Stephen's DAT machine you do not need a 2400Hz sync track and so just feed audio into one of the stereo tracks. In fact if you have two receivers you could record METEOSAT on the left track and NOAA/METEOR on the right, giving you twice the storage. Unfortunately you cannot record the stereo tracks separately, at different times. I understand that Stephen's DAT recorder is now no longer available. The new Sony DAT recorder is the DTC 750 -RRP £449. I'm told that the maximum recording time at the moment is 120 mins. Using my video recorder and an E-240 tape I get 8 hours of off-air quality recordings, using the one track method and of course I can use it as a video recorder. So you get two for the price of one.

The Panasonic NV-F56B is priced in most shops around £450. It may be possible to use other NICAM HI-FI recorders for this purpose, but I have not looked into this.

The beauty of having an off air quality recorder is that if you do not set up your computer properly on a direct pass you only get one chance. This allows you to get it right and get the whole pass.

Trouble is you will probably have to buy one for the wife as she is bound to want it just when there is a satellite going over.

RIG CROSSWORD NO.2



CLUES...

Across

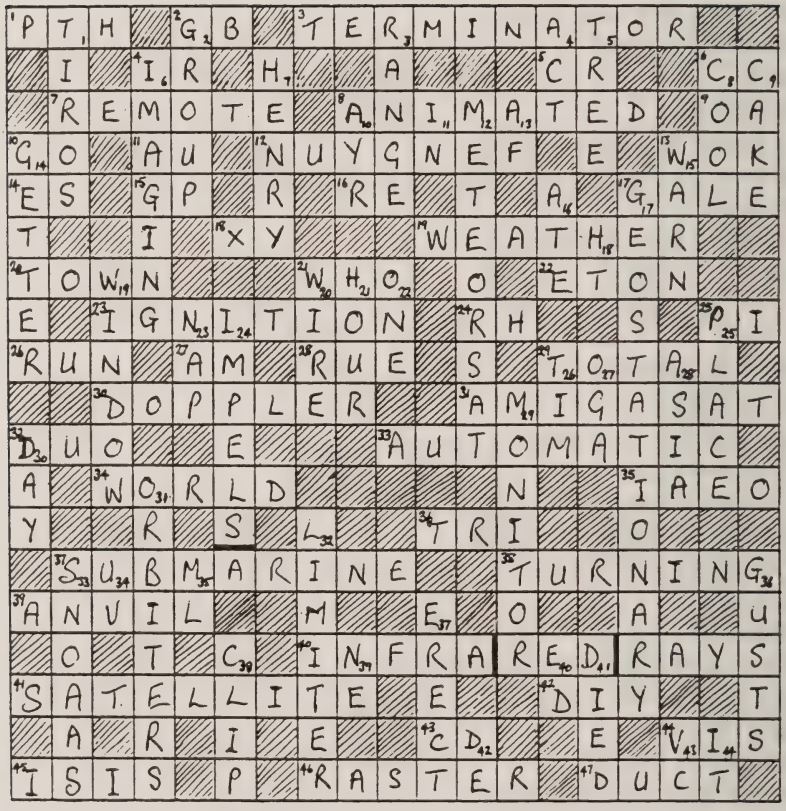
1 This speeds up your hard disk
4 Fellows
7 By way of
9 Modem won't work until you do this
10 Emergency call!
11 Industrial little fellows
14 Just the thing to mount a 12ft dish on?
16 Not a computer type of flag
17 Turn off the squelch
18 Shock
20 Russian birds
22 3.14 features in this chart
24 Just the thing to plug your sat interface card into
25 Successor to the quill
26 Ascending and descending
27 Plots

Down

1 Last drink of the day?
2 Built up from parts
3 These girls live near the roof
4 Acts rearranged in London musical
5 The clouds move with this system 8,3
6 All your pocket money used up
8 Precious little relic on the computer screen
12 You'll be one of these if you hook up the rx reverse polarised
13 It'll be a cardinal one if you do 12 down
14 Keep ... about the cost of the new rx
15 Thing you do with levels
18 Called Peter?
19 Australasian singer
21 You can split them laughing
22 Writes
23 Tied does this

Are you any good at compiling Crosswords; if so send one in to the Make-up Editor using the grid from No.2 in this issue, together with answers. If we get a good response we can make it a regular feature.

ANSWERS TO THE CROSSWORD IN RIG25...


PTH GB TERMINATOR
I IR H CC
REMOTE ANIMATED OA
GO AU NUYGNEF EWOK
ES GP R RE T AG GALE
T I XY WEATHER
TO WN W HO O ETON
E IGNITION RH S PI
RUN AM RUE S TOTAL
DOPPLER AMIGASAT
DUO E AUTOMATIC
A WORLD N IAEO
Y R S L TRI O
SUBMARINE TURNING
ANVIL M EO A U
O T C I NFRARED RAYS
SATELLITE E DIY T
A R I E C D E V I S
ISIS P RASTER DUCT

AN ODE IN SYMPATHY WITH THE TREASURER ENTITLED "HENRY RANG!"

Lift up my head, jump out of bed, dive into the bathroom
paste on brush, have to rush...Henry rang!

Now I'm late, just can't wait, for breakfast to be ready
Cup of tea, where's my key...Henry rang!

In the car, not too far, into the office running
Relax in seat, clients to meet...Henry rang!

Home at four, through the door, greet the wife and kiddies
Put up feet, start to eat...Henry rang!

Watched the News, Hill Street Blues, plot is quite dramatic,
Vital part, just to start...Henry rang!

Day is past, peace at last, feeling quite romantic
Early night, turn out the light...

...You guessed it, HENRY RANG!!!
Anon.

FOR SALE...

DARTCOM SATELLITE ACQUISITION SYSTEM (version 2.2A) New in 1990
Offers from £800.00 - £1000-00 or thereabouts

System comprises:
Rasterex RPB 720 full length Graphics processor board (based on TMS 34010 GSP graphics processor chip), with 1 Megabyte on-board memory.
Westward 15" RCM 720 analogue colour monitor.
Dartcom full length image acquisition board and dongle.
All related software and documentation.

This equipment is in full working order and in excellent condition. All that is required is a receiver (Meteosat and/or NOAA/METEOR), and a suitable computer (286/386 recommended). The system may be demonstrated by appointment.

Contact: Chris Kaley, 128 Station Rd, West Drayton, Middx. Tel: 0895 446096

SHAREWARE CORNER...
By Mike Goodall

A new feature which will give newcomers an idea of the excellent picture file viewing programs which are available through the Shareware system. For those not familiar with this concept, let me explain. When the IBM company invented the PC around 10 years ago the only programs available initially where those professionally written, and sold at an astronomical price. Our American computer buffs started writing programs themselves, and some were made "PD" (Public Domain). This meant that they were free to anyone who wanted to use them, and free to copy and distribute. There are still some of these around, but most are now licensed as "Shareware".

The concept is simple. A programmer normally spends weeks or months tailoring a program to do a specific job (wordprocessing, speadsheet, graphics, or a specific hobby-related subject) and then releases it as Shareware so that other interested parties can get their hands on it at a reasonable cost. In return for the weeks (or months) of work, the Author gets a small payment from registered users to encourage him or her to upgrade and modify it to produce better results. Anyone can pass on a copy to their friends to try it, free of charge. Only the costs of copying and supplying the media (disks) should be charged. A period of up to three months is allowed to evaluate it, and if you wish to use it on a permanent basis you are requested to register it with the author. You then receive full documentation, the latest version, and options of upgrading (free or for a small charge) when this becomes available in the future.

The whole concept relies upon the honesty of the user to register, prices vary from a few pounds to forty or more, for some of the larger intricate ones, but most are around $25.00 American. There are normally no problems paying in American dollars via VISA, Access, etc. Just fill in the order form (normally contained in a doc file with the program and airmail or Fax it to the states. It will probably return by Airmail and your local post office will pay the few pounds duty and charge the nominal £1.00 for the privilege. You then reimburse them. (A simple system of obtaining small goods from abroad).

There are a few British Authors writing shareware now, but the vast majority are American. Most are written for the PC, literally thousands are available, but there are some for the other machines, such as ST, etc. I would like our members whose use shareware to inform me of what they use, especially for viewing pics, and give a short resume of its good and bad points. The ones that I am evaluating at present are IMPROCESS and VPIC v.4.6.

IMPROCESS:
For PC and compatibles. Principally a GIF editing system, although you can view GIF files with it. Among the features are: Adding text in several size fonts to the picture and re-saving it. Making up a palette, although all 256 boxes have to be manually changed via a 'fader type' control box. (This could take hours!). Provision for making and pasting multiple images and a host of paintbox features. This is the only program I have seen to add text to your GIF files. (Unless you know any different!). Using it as a viewer can produce odd results as the 0 and 255 levels are used for file pull down menus. However it will keep you amused for hours. Copy available from GIF library DISK 99.

VPIC v.4.6:
For PC and compatibles. The original program has been around for years, but it is constantly being updated to improve features, speed and eradicating bugs. It is one of the best viewing programs available, coupled with ease of use. Most video formats are covered, plus contrast and brightness can be altered to your requirements, (useful on dark NOAA vis images) and the re-saved for you personal library. This is highly recommended for beginners. There are programs available, such as PICLAB, with lots more applications, but some are very hard work to drive. A copy of VPIC is also available on GIF library DISK 99.

PCTRACK v.1.1:
This is the current tracking program being evaluated on my machine. It gives a good map of the World and once you get used to the keystrokes it is very easy to fast forward and reverse the satellite orbit on the screen to get very accurate times of a pass. The map also contains a Bullseye type display on the right, with your location at the centre. You can see how many degrees East or West the satellite will pass. The only problem is that new keplers have to be put in by hand (rather than the 2-line kepler files that some programs like ProsatII will accept), but if they are updated only every month or so, this should not be a too arduous task. Also available on DISK 99.

If I get a favourable response with 'Shareware Corner' I will try and make it a regular feature. If you have any suitable shareware programs (RIG related ones only please) please send me a copy for evaluation..

MEMBER'S LETTERS...

Dear Ed,
Just a few words from me as you asked for info on any AMIGA owners. I joined RIG early on in its formation and have received newsletters from No.1 and have a full set up to date.

I constructed the early version of the YU3UMV framestore and have since modified and added various bits that have appeared in RIG. I started with the Cirkit receiver then changed to the Maplin receiver and have had great enjoyment receiving the weather sats.

Later on I added the Maplin down-convertor plus pre-amp and aerial so that I could receive the METEOSATS which I again enjoyed. I would like to decode the digital info but I think it would be expensive.

Since buying the AMIGA 500 plus A590 hard drive, I purchased the AmigaSat V.2 from Martelec. This of course does far more than the framestore, but I still use my old framestore quite often.

Other uses for my AMIGA 500 which I have tried are Packet/RTTY using a PK232 and SSTV/FAX using the AVT unit from America.

I would like to see far more info from others on using the AMIGA for weather sats and other amateur uses, most articles seem to be about PC's. [Come on Amiga owners, get typing! Mike]

All the very best to all RIG readers and officers
Peter Lee G4GEW, Coulsdon Surrey

Dear Ed,
I'd appreciate any help from members with the following:

1. A circuit diagram (photostat will do) for a Rank Xerox 400 Telecopier machine.

2. Styli for a Plessey KD11N Remotecopier fax machine.

3. Anyone with experience and circuit diagrams for mending video printers.

4. Has anyone seen an article to convert 2.4kHz APT audio into a signal to feed into office fax machines (modern digital ones)?

5. Does anyone besides Henry Neale and myself, maintain and use a photocopier of their own? I can help with some problems as I've learnt a lot about them in the last 5 years, but could do with some help myself in getting parts for old models (and circuits). They are very useful machines to have in your shack, but some faults are hard to cure without the manual, inside knowledge or rare spare parts. Rank Xerox 660, 2300 and Panasonic FP3001 info is needed. Henry wants one of them if he can't get his Decimo Copyrite working.

6. Can Muirhead 2" and 3" magslip synchro transmitters or receivers be used as synchronous motors? How do you connect them for servo use?

And now some info that may be of help to other members...

OF NEWS... A recorded bulletin giving orbit details etc., on NOAA weather satellites is run by 'Weatherwatch UK' at RAE Lasham Airfield, Alton, Hants. Tel: 0256 381448 Ring after 6p.m. If you need something not covered in the bulletin or want to register with them, ring in normal office hours. They can put you in touch with weather satellite enthusiasts in your area to help in your project, the way Des Watson can between RIG members. I'm down to help people if I can, (on both databases) but I've not been asked yet.

Further to my article on gears in RIG 25 (Note: first diagram should say 15T brass gear and worm drive). Use chamfers inside adaptor bores where needed to ease assembly. Slightly chamfering the shafts helps also.

Proops sell a set of 10 plastic metric gears (including 2 racks) for £2.95 inc.VAT, and a divide by 40 nylon worm and gear for 95p. The catalogue is 50p. Min order £5 post free. Address is:
Proops,
The granary, Chessels Farm,
Hoe Lane,
BOGNOR REGIS,
West Sussex PO22 8NW Tel: 0243 587009

Metric model maker's gearbox kits with 18 gears and a motor can be bought for £3.00 + £2.50 p&p, quote 3P93. Address is:
Bull Electrical,
250 Portland Road,
Hove, Sussex, BN3 5QT Tel: 0273 203500

Metric plastic Raebosch gears are available from model shops 18T to 36T in 2 tooth increments. Price £1.73 to £2.20 each. They also make universal

joints for easy coupling between motors and shafts. They have brass inserts in each end so you could connect a 6mm motor shaft to a 1/4" drum shaft, drilling them out to a different size if necessary.

Metric bores Imperial bores
1.8, 2, 2.2, 3, 4, 4.5, 5, 6 1/8 3/32 3/16 1/4
Threads M4 (or 4BA) M5 (or 2BA) M6 1/4 UNF 3/16 UNF 1/4 BSF
Inserts are 90p inc. VAT. Joint pairs are 98p inc. VAT.

In case of difficulty, contact:
J. Perkins Distribution Ltd.,
90 to 96 Greenwich High Road,
LONDON SE10 Tel: 081 692 2451 Catalogue is £3.50

'Hobbys' and 'M/W. Models' mentioned in the last issue also do universal joints.

An old model railway engine with motor, worm and gear makes a good paper puller gearbox, or use an old tape recorder rev counter. Strip off all the bits not needed and fix the gear to the shaft with araldite or hot glue. The output can turn a small mangle arrangement. The worm shaft is the input form a small D.C. motor of course.

If you have a fax printer as in 1. or a Rank Xerox KD211, they use A4 white dry electrostatic paper. It costs £10 + £3.75 p&p + VAT for 250 sheets. £16.16 total. Available from:

Sensitised Coatings,
Units 9 & 10, Bergen Way,
North Lynn Industrial Estate,
King's Lynn, Norfolk
PE30 2JL Tel: 0553 764836

They sell chart recorder paper and most types of fax. paper except the wet and soggy type. They may be able to get Telecopier paper on rolls for continuous printing on a 3 styli machine, but if not, Echo Sounder paper 81/2 wide and 100ft long roll is available. This is a green shape (I haven't had a sample yet). Type ZV9557 costs £25.35 + VAT (£29.79 total-£30 minimum order).Address:

Kelvin Hughes Ltd.,
New North Rd.,
ILFORD, IG6 2UR Tel: 081 500 1020

For 4" wide echo sounder paper (very light green) contact:

Sutton Marine International Ltd.,
Salt Quay House, North East Quay,
Sutton Harbour, PLYMOUTH
Devon PL4 0RA Tel: 0752 662129

Their 50 foot long rolls cost £6.99 inc. VAT. Add £2 p&p or ring them to find your nearest agent. Either paper should do fine for isobar charts and maybe satellite pictures also, but the stylus voltage may need altering.

The wet and soggy electrolytic fax paper used by Muirhead and Alden machines is available at £58.20 = £5 p&p +VAT for 6 rolls (9" wide x 200 foot long) £79.26 total. Quote P1722 for type 'H' impregnation which is best for satellite pictures, but has limited shelf life (6 months in a fridge). Quote P1708 for type 'A' impregnation which is good for text and isobar charts and has a 2 year shelf life in a fridge. They can get writing blades also. They sell a printer kit for isobar charts etc., automatic operation, at £345 + £10 p&p + VAT (£417.13 total). The paper is 11" wide so you get a good size picture. Address is:

ALFAX, Unit 7,
Nonsuch Industrial estate,
Kiln Lane, EPSOM,
Surrey KT17 1ER Tel: 0372 741062

If you'd like to build a collapsible umbrella dish for Meteosat, you can get radar reflecting material which is like a thin net curtain with silver coating. It can be sewn by machine, used for RF screening and bonded in fibreglass of any shape. Type 1022 is 1.37 metres wide and costs £7.19 per metre length plus p&p + VAT.

A more durable mesh with plastic protection should resist cracking of the silver due to bending or folding, costs £12 per metre + p&p + VAT.

You could take your dish on holiday with you. A large golfing umbrella that has 16 radials (Doubled up to make 8 radials) would be a good basis for a dish. Separate the 16 radials out evenly (22 1/2 degrees spacing) the rest is up to you. Contact:

Chemring Ltd.,
Alchem Works, Fratton Trading Estate,
PORTSMOUTH, PO4 8SX Tel: 0705 735457

Crater Tubes (Glow Modulators), which act like large expensive neons and are very scarce, are ideal for photographic fax machines. They cost around £100 each these days. Type XL601 and XL641 amongst others are available from:

English Electric Valve,
106 Waterhouse Lane, CHELMSFORD,
Essex CM1 2QV Tel: 0245 493493

Wish I could afford one! I have a Muirhead D901 to convert.

You may have seen the 'Weather Satellite Handbook' by Dr. Ralph Taggart WB8PQT, at radio rallies. It can be bought by post for £14.50 + £1.00 p&p from:

S.W/M/ Book Service,
P.W. Publishing Ltd.,
FREEPOST
Post Sales Dept.,
Enefco House, The Quay,
POOLE
Dorset BH15 1PP Tel: 0202 678558

This fourth edition is more computer orientated than previous ones, which is not surprising considering the advances since then.

Some of the items mentioned are certainly not cheap, but show what is available if you've got the money to spare. If anyone can help with the 6 items at the beginning of my letter, I'll be glad to share the results on any replies with any other interested members.

I'm still wading through the bumper 96 page RIG 25, worth waiting for!

Graham Smith (G1JVZ),
91 Oakdene Avenue,
CHISLEHURST,
Kent BR7 6PZ tel: 081 857 3106

Dear Henry,
Thanks very much for the latest RIG newsletter, it's a interesting and thought-provoking as ever, particularly in the area of high resolution picture reception.
Tim Kearsley, Northants.

Dear Henry,
Although I have been receiving satellite images for quite a few years now I am a new member to RIG. I received my first "newsletter" a few weeks ago. It was more than I ever expected, excellent to say the least.
Dave Brown, Isle of Man.

Dear Henry,
Having joined RIG in March of this year and recently received my copy of Newsletter No.24 I would like to say how pleased I am with the content and many interesting articles which it contains. Newsletter No.25 is eagerly awaited.
Dave Robson, York.

That's all the readers letters this time, luckily they are all complimentary! (we haven't received any uncomplimentary ones, but would still print them, Honest!). Please write and tell us what you think of the Newsletter and any ideas for improvements. [Mike]

RIG AT RALLIES...

Below is a list of rallies attended by RIG this year. We hope to see you again at these events next year, but at present, of course, it is too early to get confirmation of bookings and dates.

March	Pickets Lock
April	VHF Convention - Sandown
April	BATC - Harlaxton Manor
May	Harrogate - Northern Rally
June	Elvaston Castle
June	Longleat
July	York
August	Woburn Abbey
August	BATC - Sandown
September	Peterborough
October	Leicester

We are always pleased to see volunteer members at these events, especially those who live local to the event, who can help on the stands, and give the regulars a small break.

If you are in doubt over any event, give the Chairman a telephone call.

LATE NEWS...

Apologies to those who wanted to purchase items towards the end of the Leicester Rally, and found we'd run out of stock. This should be rectified by the time you read this letter, but please phone Henry first before ordering. H.N.

RIG HELPLINES:

General Enquiries Meteosat information NOAA information Supplier Complaints	John Tellick	081 390 3315
Russian, Chinese satellite info/status	Les Currington	0707 326058

Schools/	John Murray	Torquay	0803 217490
Educational	Frank Bell	Godalming	0483 416897
Enquiries	Tom Walter	Reading	0734 871330
	Bob Coombes	Haslemere	0428 642930
	John Din	Bristol	0454 773387

Framestore Technical Support	Mike Coombs	0530 243494 7.30pm - 9.30pm

RIG MICRO SPECIALISTS:

BBC Micro	Enquire via John Tellick	081 390 3315
Commodore Amiga	James Brown	0656 782632
Atari ST, Archimedes	Peter Newman	0487 812121
PCSAT3 and PROSATII	James Brown	0656 712632
HRPT and Primary Data	Dave Cawley	0440 820040

Meteosat Downconvertor:-

a) Assembled and tested module in tin plate box:-.....£147.00
b) Complete mounted in weather proof box:-.....£183.00
Waterproof power and channel change connector £10.00 extra if required, but note these functions can all be done via the coaxial downlead.

RIG VHF Scanning Receiver

a) Basic receiver module, with LED Channel number display, fully assembled and tested.....£128.00
b) Same module as above but with liquid crystal frequency display module replacing the LED Channel display.....£169.00

The **RIG VHF preamp** also available includes a bandpass filter and is ideal for mast-head mounting. It is available from the Chairman as a built and aligned PCB measuring 85mm by 33mm (3 5/16 x 1 15/16 inches). Module including first class post.....£16.00

28 page booklet entitled: Introduction to Weather Satellites & their Reception by Mike Mansfield.....£2.50

Low noise Amplifier Kit
All enquiries re availability etc. to the Chairman.....£28.00

David Juett YU3 i/f s/w for IBM PC & clones.....£6.50

Dishes, only 1.6 metre available.....£48.00

Original Feedhorns (2 only).....£36.00

ALL ITEMS ABOVE ARE AVAILABLE FROM THE CHAIRMAN
All cheques payable to "Remote Imaging Group" please

Rig Binders
Available by post from Gordon Fleming, 168 Bythway, Welwyn Garden City, Herts. AL8 1DU. Price £4.00 each, including P&P.
All Cheques payable to "Remote Imaging Group" please

RIG - Timestep PCSAT III

A small half sized PC card that will allow the display on IBM PC type computers of APT signals from Meteosat, GOES, NOAA and the Soviet polar Meteor and Okean satellites.

Card type	Half card 8 bit, plate through solder resisted
RFI	FCC part 15 and 1992 EMC compatible
Input	Two separate inputs, 100mV 10K ohm audio (adjustable)
Source	Live or from tape (no sync track needed)
Synchronisation	Derived from subcarrier on Meteosat, GOES and NOAA. From digital signal processing (DSP) on Meteor and Okean. No computer timing or calibrations used (or needed).
Resolution stored on disk	600 pixels 800 lines and 256 intensity levels
Zoom	To pixel resolution regardless of video card
Acquisition	Fully automatic on Meteosat and GOES (any PC). Fully automatic NOAA, Meteor and Okean live or tape (VGA, 286 and above only)
Printing	High resolution HP LaserJet (and clone) driver
Power	Supplied from host computer
Colour	64 greys or 256 colours from colour routine supplied
Contrast	Stretch or compression in linear or non linear
Display resolution	800 x 600 256 colours VGA
	640 x 480 256 or 16 colours VGA
	640 x 400 256 colours VGA (Paradise, Amstrad and Atari)
	320 x 200 256 colours VGA (display only, receive in 640x480x16 mode first)
	640 x 350 16 colours EGA (not NOAA or Soviet)
	320 x 200 4 colours CGA (not NOAA or Soviet)
	640 x 200 16 greys Amstrad 1512 (not NOAA or Soviet)
Cards supported	Any IBM register compatible card
	Tseng Labs chip set (Orchid, Sota etc)
	Paradise (Amstrad, Atari, Vigien etc)
	Video 7
	Trident (legal versions only) (Morse, ZyMOS)
Animation	Flicker free. Any section or zoom, 400 x 300 x 7 (VGA EGA)
Contents	Manual, PC card, software
Input connector	9 way D socket
Price	£137.50 (rally price) plus £3.50 postage and packing

Available from

Henry Neale
Thornlea Fishersgate Sutton St James
Spalding Lincs Tel. 0945 85353

RIG Timestep PROsat II

The PROsat II Weather Satellite system is for those users with a good PC. The system will outperform most Apple MAC II and other systems up to £25,000.00 with ease !

The system receives Meteosat, NOAA, GOES, GMS, Meteor synchronous, Meteor assynchronous, Okean synchronous and Okean assynchronous, also Feng Yun when available. High quality images are displayed in 1024 x 768 pixel resolution with 64 grey levels or 256 colours.
1024 x 768 in 256 greys is available for the Hercules Graphics Workstation Card !

Animation is available from Meteosat. This stunning facility is best shown when watching storms develop and move across the Earths surface. Up to 100 images can be automatically animated. More importantly, unlike other systems it shows the last 100 frames continuously, you don't have to ask it to show you, it's on the screen all the time. Also, unlike other systems when all 100 frames have been received it doesn't just stop, it carries on and replaces the earliest frame with the latest one. In other words every time you pass by the PROsat you will see the last 100 frames.

Meteosat Animation

Full screen animation of 100 frames

Zoom mode in animation

User definable grey scale

NOAA Meteor Okean Feng Yun Polar Option

Live display of incoming images

Saves COMPLETE pass in full resolution (2.4MB file)

3D and image processing

Temperature readout with no calibration needed

Automatic Latitude and Longitude Griding

Your location shown on image

Temperature slice for ice floe studies

Meteosat still frame

Laser dump built in

Live display of incoming images

Auto Schedule for saving in your absence

Zoom and Pan to greater than pixel level

3 D display option

Histogram equalisation for best contrast

Smoothing filter

Edge enhancement filter

Median filter to remove annoying country outlines

Transect from ANY two points

False colour with autoshade

General

This new card with gold plating has built in relay switching for two receivers. It is fully mouse driven with easy intuitive pull down windows. It will run with the new Tseng ET4000 and Trident 8900 cards in 1024 x 768 x 256 in all modes (except animation). This feature allows maximum resolution in real time.

It will only work with a 286 or better PC with VGA and a properly formatted hard drive.
Super VGA and a mouse are required for some facilities.

See James Brown's review in RIG 26 for an impartial users impression.

The retail price is £499.99 but can be bought from Henry Neale for only £249.95 plus £2.50 postage. You can upgrade your PCSAT III if you return the original unmodified card and discs directly to timestep for £120.00 inc. You must be a RIG member to qualify for these prices.

Henry Neale
Thornlea Fishers Gate Sutton St James
Spalding Lincs. Tel. 0945 85353

PROLOGUE COMPUTERS LTD

2 ORCHARD RISE, OLVESTON, BRISTOL
BS12 3DY. TEL 0454 612882/325430

➪ COMPUTER SYSTEMS

PRICE

➢ NEAT 286 12 MHz 1MB (upto to 4 MB on motherboard) 42MB IDE Hard Disk, 1.2 or 1.44 MB Floppy Drive, Small footprint delux Case, 200W PSU, 4 Free expansion Slots, VGA(512Kb AT PARADISE) 14" SUPER VGA COLOUR 1024x768 — £679.38

➢ NEAT 286 16 MHz 1MB (upto to 4 MB on motherboard) 42MB IDE Hard Disk, 1.2 or 1.44 MB Floppy Drive, Small footprint delux Case, 200W PSU, 4 Free expansion Slots, VGA(512Kb AT PARADISE) 14" SUPER VGA COLOUR 1024x768 — £713.54

➢ NEAT 386sx 16 MHz 1MB (upto 8 MB on motherboard), 42MB IDE Hard Disk, 1.2 or 1.44 MB Floppy Drive, Small footprint delux Case, 200W PSU, 4 Free expansion Slots, VGA(512Kb AT PARADISE) 14" SUPER VGA COLOUR 1024x768 — £810.62

➢ NEAT 386sx 20 MHz 1MB (upto 8 MB on motherboard), 42MB IDE Hard Disk, 1.2 or 1.44 MB Floppy Drive, Small footprint delux Case, 200W PSU, 4 Free expansion Slots, VGA(512Kb AT PARADISE) 14" SUPER VGA COLOUR 1024x768 — £842.02

➢ NEAT 386 25 MHz 1MB (upto 8 MB on motherboard), 42MB IDE Hard Disk 1.2 or 1.44 MB Floppy Drive, Small footprint delux Case, 200W PSU, 5 Free expansion Slots, MSDos v5, Serial VGA(512Kb AT PARADISE) 14" SUPER VGA COLOUR 1024x768 — £926.02

➪ OPTIONS

12" MONO HERCULES	less		(£197.50)
12" VGA MONO 640x480	less		(£168.75)
14" VGA MONO 640x480	less		(£163.75)
14" VGA COLOUR 640x480	less		(£26.25)
14" SUPER VGA COLOUR 1024x768	add		£0.00
ST1102A 89Mb 19ms IDE	add		£103.75
ST1144A 128Mb 19ms IDE		add	£170.00
HP DESKJET 500		add	£329.00
Canon LBP4+ HP Lasertwin		add	£605.00
MSDos v5		add	£49.98

➪ BAREBONE SYSTEMS

AT 286–12MHz/DELUXE CASE/200W	£133.75
AT 286–16MHz/DELUXE CASE/200W	£156.25
386SX–16MHz/DELUXE CASE/200W	£251.25
386SX–20MHz/DELUXE CASE/200W	£276.25
386–25MHz/ FULL AT CASE/200W	£575.00

➪ COMPONENTS

Motherboards		Hard Disk Drives	
NEAT 286–12MHz / EMS	£63.75	ST157A 42Mb 28ms IDE	£128.75
NEAT 286–16MHz / EMS	£86.25	ST1102A 89Mb 19ms IDE	£232.50
NEAT 386SX–16MHz / EMS	£181.25	ST1144A 128Mb 19ms IDE	£298.75
NEAT 386SX–20MHz / EMS	£214.50	VGA Cards	
NEAT 386DX–25MHz / EMS	£305.50	VGA (256Kb AT PARADISE)	£70.00
NEAT 386DX–33MHz 128K Cache	£429.00	VGA(512Kb AT PARADISE)	£85.00
486DX–25MHz 64K Cache	£741.00	VGA (1Mb TL ET4000)	£102.50
486DX–33MHz 128K Cache	£767.00	Monitors	
Floppy Drives		12" VGA MONO 640x480	£91.25
5¼" 1.2Mb TEAC FD Drive	£51.25	14" VGA MONO 640x480	£96.25
5¼" 360Kb TEAC FD Drive	£48.75	14" VGA COLOUR 640x480	£207.50
3½" 1.44Mb TEAC FD Drive	£46.25	14" SUPER VGA COLOUR 1024x76	£218.75
3½" 720Kb TEAC FD Drive	£45.00	14" MULTISCAN COLOUR	£265.00

All Prices EXCLUDE VAT (17.5%). Normal delivery 5 Working days

AMIGASAT V2.0

This is a sophisticated satellite decode package with many clever and unique features, enabling Amiga owners to enjoy superb image quality equalling the best around, and providing image processingpower envied by other systems.

Features:

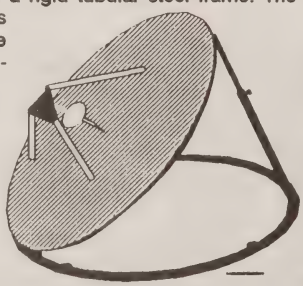
- *Extensive software DSP throughout the package.*
- *Images stored in full 8-bit resolution*
- *Preservation of original full-resolution image irrespective of subsequent picture processing.*
- *Zoom - fixed and user defined.*
- *Decodes new Meteosat digital header information.*
- *Powerful image enhancement routines, supporting multiple images, extensive digital filtering, and inter-image processing*
- *Stores images in Amiga's own IFF picture format, providing easy access to the huge array of third-party software programs for touch-up, animation, text overlay etc.*

£139.50

Demonstration Disc £5

Meteosat Dish & Feed

The MSD20 is a precision spun aluminium parabolic dish, mounted on a rigid tubular steel frame. The 95cm dish comes complete with the MSF20 silver-plated dipole feed assembly, having an N-type, 50ohm output socket.



£137.65 (next day del. & ins. £18)

MSF20 Feed only £39.50 (carr.£4.25)

Introduc

Satellite and Facsimile

This has to be the package for PC users, offering not only satellite decoding, but also a comprehensive facsimile package.

The package comprises an internal interface card containing all circuitry for AM and FM demodulation, ADC, and filtering, and having separate inputs for facsimle and satellite data.

General Specification

- *Decodes ALL weather satellite signals*
- *Decodes ALL (HF) facsimile signals*
- *Prepared for SSTV (software option)*
- *Prepared for Codebreaker CW/RTTY/ASCII (software option)*
- *Interface will fit any IBM Compatible PC*
- *Universal integrated software (copy protected)*
- *Full 8-bit hardware resolution*
- *Auto-save facility*

Digisat

This comprehensive and delightful PC compatible hardware/software package has recently been upgraded to include a printer dump facility - at no extra cost! Works up to 800 x 600, providing *unlimited* animation sequencing, auto down-loading, temp readout and lots more. **Special offer £125**

Other Products

	£
MSG20 Graphstore & Grace s/ware	347.78
Omnifax New Sat decode package for PCs	169.95
Archimedes Podule & s'ware (A3000)	295.52
" (Arc 300 & 400 series)	260.00
MSK20 VHF Preamplifier	17.00
Demo Discs: Arc (2), Amiga (1)	ea 5.00

Omnifax

coding in one package!

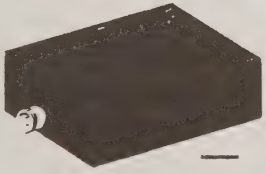
Weather Satellite Decoding: Decodes Meteosat, NOAA, Meteor, Cosmos etc., all sync tones detected. Contrast and brightness controls on interface, plus software control of brightness. Features fully automatic reception capability, programmeable timer, multi-sequence animation, and superb printer dumps for laser and dot matrix.

Facsimile Decoding: The system docdes all facsimile signals that can be received (VLF, HF, VHF, & UHF), including amateur fax, weather charts, sat photos, and press photos - including colour photos! The package provides automatic scrolling, and caters for IOCs of 144, 264, 267, 288, 353, & 576., and drum speeds of 60, 90, 120, 180, and 240 rpm. There is software shift selection of 1900 ±400Hz or 1900 ±150Hz. Choice of 4 scanning directions. Quartz stabilized drumspeed reference oscillator.

- ***Full details upon request***

Complete h'ware/s'ware package £169.95

Low Noise Downconverter

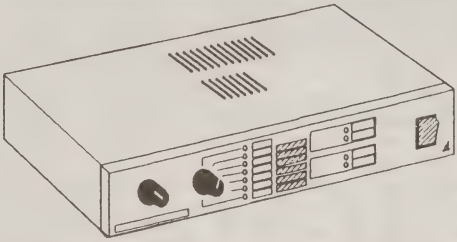


With built-in GaAs-FET preamp, and housed in a weather-proof ABS box, the MSC20 is a very low noise converter (typ. 1dB). Its temperature-controlled circuitry provides both Meteosat channels on 137.5MHz. The unit comes complete with all connectors, N-type/N-type cable, and silicon sealing tape.

£150

Carriage & Ins. **£4.25**

MSR30 Synthesized Receiver



If you're looking for a professionally- built synthesized receiver, with performance to match, then the MSR30 has to be the one. No corners have been cut to achieve the best possible performance, and a host of features including:

- *Built-in Scanner with intelligent halt (2.4KHz detector)*
- *Auto tape record facility, with adjustable noise dropout delay*
- *Auotomatic frequency control*
- *Adjustable APT output level*
- *Separate internal PSU for downconverter*
- *Tailored APT passband filtering.*

£295

Carriage & Ins. **£7.50**

Components & Miscellaneous

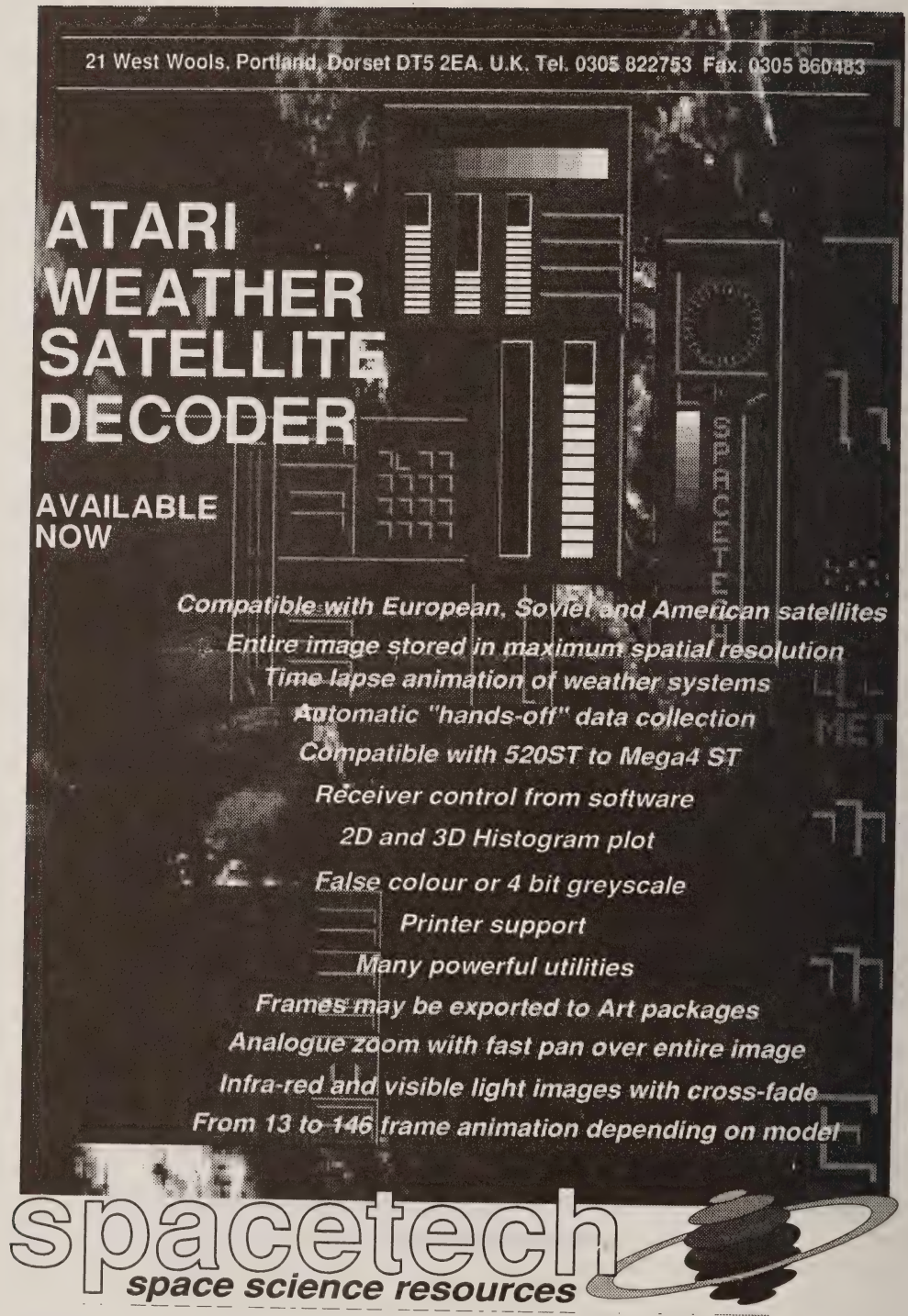
		£ ea.
SL6601C	FM IF	0.80
BF981	Low noise MOSFET	0.42
NE32184A	GaAs HJFET (Nf = 0.37dB @ 2GHz)	9.50
Xtals	(All common sat freq.)	3.50
NE567	Tone decoder	0.85
MSA-0835	Low noise MMIC	2.85
NE76184A	GaAs MESFET (Nf = 0.8dB @ 4GHz)	7.80
ATF10136	GaAsFET (Nf = 0.4dB @ 2GHz)	9.80
TL071	Low noise Op Amp	0.30
TL072	Dual TL071	0.35
TL074	Quad TL071	0.40
LM324	General purpose Quad Op Amp	0.25
SFA10.7	Ceramic Filter	0.85
FX1115	Ferrite Bead	0.08

Send S.A.E. for full list of ICs, FETs, Coils, Filters, Xtals, connectors

Ordering Information: Prices exclude VAT, add 17.5% to total for U.K. orders. Where not indicated, carriage should be added at £1.50. For more than one item the maximum carriage is £7.50 (£18 if MSD20 included). Overseas rates are payable at cost. Payment may be made by cheque, postal order payable to ***Martelec Ltd.***. ***Visa*** and ***Access*** cards accepted.

The Acorns, Wyck Lane, East Worldham, Alton, Hampshire, GU34 3AW

Tel/Fax 0420 82752


21 West Wools, Portland, Dorset DT5 2EA. U.K. Tel. 0305 822753 Fax. 0305 860483
ATARI
WEATHER
SATELLITE
DECODER
AVAILABLE
NOW
Compatible with European, Soviet and American satellites
Entire image stored in maximum spatial resolution
Time lapse animation of weather systems
Automatic "hands-off" data collection
Compatible with 520ST to Mega4 ST
Receiver control from software
2D and 3D Histogram plot
False colour or 4 bit greyscale
Printer support
Many powerful utilities
Frames may be exported to Art packages
Analogue zoom with fast pan over entire image
Infra-red and visible light images with cross-fade
From 13 to 146 frame animation depending on model
spacetech
space science resources

FRAMESTORE or PC or Amiga ?

Feature	PC Framestore Amiga
Screen resolution	1024 x 768 x 256
Number of colours	256 out of 1/4 million
Animation	up to 100 frames
Save image in full resolution for later use	YES
Printer facility using laser printers	YES
NOAA and ALL Polar satellites	YES
Meteosat and ALL Geostationary	YES
NOAA HRPT option	YES available now
Meteosat PDUS Primary Data	YES available Feb 92 on demonstration now
Cost to upgrade per 1 Megabyte	£39.00
Cost to upgrade to 40 Megabyte hard disk	£135.00
Runs industry standard software	YES
RIG PCSAT III Software included	YES
Total cost INCLUDING PCSAT III software	£499.00
Completely built including mains plug	YES

We firmly believe that the PC is the best solution for Weather Satellite use. The on screen resolution of 1024 pixels, 768 lines and 256 colours is superb. The abilily to add memory at just £39.00 per megabyte is incredible. The 40 Megabyte hard drive at £135.00 is amazing. HRPT and Meteosat Primary data will work on the PC AND we can demonstrate this NOW !

Why don't you look carefully at other systems, add ALL the costs and see how they compare. Fill in the details on this page. Check carefully that the new Soviet Meteors and Okeans are fully covered. Check that you can see HRPT and Primary Data working NOW, we all know what "we are working on it" means. Check that everything is in stock. Check on the availability and price of upgrades. Ask other users and RIG members. Then and only then decide what your future in weather satellites is going to be !

What do you get ? A 286 16Mhz computer in a real metal case with a 200W full spec power supply. 2 serial ports and 1 parallel port. A full AT keyboard. 1Mb of RAM. A 1.44 or 1.2Mb drive. A 1024 x 768 x 256 colour ET4000 video card. MS-DOS 5.0. RIG PCSAT III card and all software. In fact a fully featured 286 computer and RIG PCSAT III ready to go.

1024 x 768 x 256 shop soiled 0.28mm pitch colour monitors £129.00

In line with our competitors, the prices in this advertisement do not include VAT at 17/5% or carriage at £15.00

Timestep
Wickhambrook Newmarket CB8 8QA England
Tel. 0440 820040 Fax. 0440 820281

TIMESTEP

HRPT System

Noise-free digital HRPT transmissions from NOAA, with a ground resolution of just 1.1km, allow images to be received in incredible clarity. Rivers, lakes, mountains, cities and even small towns can be seen on good days. Fishermen will appreciate the increased resolution of sea surface temperatures.

Image processing, including variable and histogram contrast equalisation combined with full colour editing, gives the best possible results from any image. Colour enhancement allows sea surface temperature and land details to stand out in high contrast. Any number of colour palettes can be saved for future use. The sophisticated mouse-driven software allows all five bands to be saved and displayed on nearly all VGA and SVGA cards right up to 1024 pixels, 768 lines and 256 colours.

Zoom to greater than pixel level is available from both a mouse-driven zoom box or using a roaming zoom that allows real time dynamic panning.

Sections of the image may be saved and converted to GIF images for easy exchange.

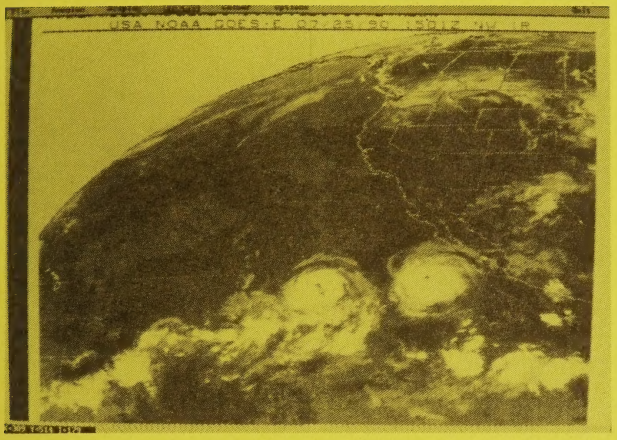
Latitude and longitude gridding combined with a mouse pointer readout of temperature will be available late in 1991.

Tracking the satellite is easy and fun! Manual tracking is very simple as the pass is about 15 minutes long. A tracking system is under development and expected by the end of 1991. A 4-foot dish and good pre-amplifier are recommended. The Timestep Receiver is self-contained in an external case and features multi-channel operation and a moving-coil S meter for precise signal strength measurement and tracking. The data card is a Timestep design made under licence from John DuBois and Ed Murashie.

Complete systems are available, call or write for a colour brochure.

USA Amateur Dealer. Spectrum International, P.O. Box 1084, Concord, Massachusetts 01742. Tel: 508 263 2145

TIMESTEP WEATHER SYSTEMS
Wickhambrook Newmarket CB8 8QA England Tel: (0440) 820040 Fax: (0440) 820281



VGASAT IV & MegaNOAA APT Systems

1024 x 768 x 256 Resolution and 3D

The Timestep Satellite System can receive images from Meteosat, GOES, GMS, NOAA, Meteor, Okean and Feng Yun. Using an IBM PC-compatible computer enables the display of up to 1024 pixels, 768 lines and 256 simultaneous colours or grey shades depending on the graphic card fitted. We actively support nearly all known VGA and SVGA cards. Extensive image processing includes realistic 3D projection.

100 Frame Automatic Animation

Animation of up to 100 full screen frames from GOES and Meteosat is built in. We call this 'stand alone animation' as it automatically receives images, stores them and continuously displays them. Old images are automatically deleted and updated with new images. The smooth animated images are completely flicker-free. Once set in operation with a single mouse click, the program will always show the latest animation sequence without any further operator action.

NOAA Gridding and Temperature Calibration

The innovative MegaNOAA program will take the whole pass of an orbiting satellite and store the complete data. Automatic gridding and a 'you are here' function help image-interpretation on cloudy winter days. Spectacular colour is built in for sunny summer days. Self-calibrating temperature readout enables the mouse pointer to show longitude, latitude and temperature simultaneously.

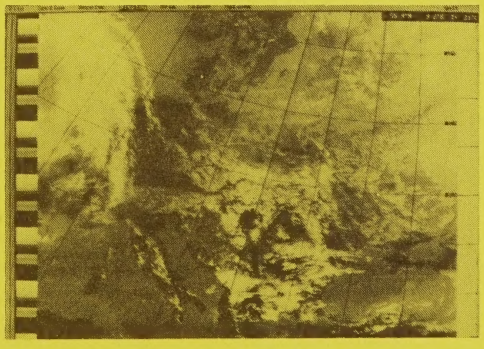
Equipment

Meteosat/Goes

❒ 1.0M dish antenna (UK only) ❒ Yagi antenna
❒ Preamplifier ❒ 20M microwave cable
❒ Meteosat/GOES receiver
❒ VGASAT IV capture card
❒ Capture card/receiver cable
❒ Dish feed (coffee tin type)

Polar/NOAA

❒ Crossed dipole antenna
❒ Quadrifilar Helix antenna (late 1991) ❒ Preamplifier
❒ 2 channel NOAA receiver ❒ PROscan receiver
❒ Capture card/receiver cable



Call or write for further information.

USA Education Dealer. Fisher Scientific, Educational Materials Division, 4901 W. LeMoyne Street, Chicago, IL 60651. Tel: 1-800-621-4769

USA Amateur Dealer. Spectrum International, P.O. Box 1084, Concord, Massachusetts 01742. Tel: 508 263 2145

TIMESTEP WEATHER SYSTEMS
Wickhambrook Newmarket CB8 8QA England Tel: (0440) 820040 Fax: (0440) 820281

Anything for the weekend Sir ?

As well as complete systems, Timestep allow you to buy all the parts separately. The quickest and least painful approach is simply to buy a complete system. Take your time and take advantage of our RIG special prices (UK only), you will save some money ! The parts you will need assuming you are using the IBM type PC approach are :-

Meteosat

Meteosat is probably the best place to start. It sends images constantly. Remember you do not need a NOAA receiver if you use our Meteosat Receiver (designed to work only with a preamplifier). This will free your NOAA system to look for the Soviet polar orbiters, something every satellite enthusiast should be doing !

Timestep products (world prices)	Britain	Europe	USA	RIG UK Members
1.0M dish antenna and feed horn	£164.95	£215.00	N/A	**£139.95**
Yagi antenna	£124.95	£135.00	$149.00	**£ 99.95**
Meteosat pre-amplifier (essential)	£ 92.00	£110.00	$149.00	**£ 84.95**
20M cable	£ 16.00	£21.00	$ 33.50	**£ 14.00**
Meteosat receiver	£199.00	£225.00	$399.00	**£169.95**
PCSAT III interface card	£199.00	£225.00	$299.00	**Henry Neale**
PCSAT III connecting cable	£ 9.95	£ 9.95	$ 15.00	**£ 6.49**
Dish feed (coffee can type)	£ 29.95	£ 38.50	$ 49.00	**£ 24.95**

Superior Pager Resistant Receiver !

or your money back !

Now many RIG members have pager free reception on their new Timestep receivers. Why not join them ? The scanning receiver covers all known satellites including the complete Soviet series.

Crossed dipole antenna	£ 39.95	£ 55.00	$ 64.00	**£ 29.95**
NOAA pre-amplifier	£ 24.95	£ 31.50	$ 49.00	**£ 19.95**
50M cable	£ 24.95	£ 31.50	$ 68.00	**£ 21.95**
PROscan receiver	£299.00	£325.00	$499.00	**£249.95**
PCSAT III interface (as above)	£199.00	£225.00	$299.00	**Henry Neale**
Track II, PC prediction	£ 29.95	£ 29.95	N/A	**£ 24.95**

HRPT

6 channel complete receiver, pre-amp input, data output	**£499.00**
PC Data card and software including gridding and temperature calibration	**£199.00**

All prices include VAT at 17.5% and carriage in Britain, and Air carriage to other destinations.

Timestep
Wickhambrook Newmarket CB8 8QA England
Tel. 0440 820040 Fax. 0440 820281